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AN ANALYSIS OF THE EFFECTIVENESS OF INSTRUCTION IN STRATEGIES FOR STUDYING AT THE GRADE FIVE, SEVEN AND EIGHT LEVEL

by

© Donna P. Larson

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

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MASTER OF EDUCATION IN COUNSELLING PSYCHOLOGY

1984

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Date October 4, 1984

ABSTRACT

The purpose of this study was to gather information on the effectiveness of teaching strategies for studying to students at the Grade 5, Grade 7 and Grade 8 levels. During the months of November and December 1983 one class at each grade level received the prescribed program of instruction in strategies for studying while the other received no treatment. Common tests in various subject areas were administered at each individual grade level. The *t* test was carried out on the data to test the null hypothesis at each grade level. On the basis of the statistical analysis the Grade Seven Experimental Group showed a significant difference in test scores at the five per cent level of confidence. A follow-up investigation conducted with the Grade 5 Class that was originally part of the control group revealed no significant variation in the statistical and self-reported data. The self-reported data in both investigations strongly endorsed the program for others.

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CHAPTER ONE

Introduction

Junior and senior high school counsellors are often requested to work with students who are not doing as well as their teachers perceive they might. One way of helping is to focus on study skills.

As a school counsellor I now frequently ask students to discuss how they prepared for the exam. The answer to the question, "How did you study?" is often the most revealing clue to the nature of the work that follows.

If the answer to the question is, "I looked over my notes," the verb "looked" deserves attention. It is at this point that I ask the student to demonstrate the posture he assumes when he is studying. Invariably the student's physical representation of the word "study" assumes a passive as opposed to an active state. The student holds his book before him with eyes gazing at the pages.

It was this observation that lead me to begin to construct a series of lesson plans that provided students with a set of strategies for studying. These strategies would need to provide a structure for physical and mental involvement with the material to be retained for the purposes of better results in exam-writing.

Teaching Strategies for Studying

It was thought that the quickest way to construct such a program would be to employ the commercial products available.

When these were surveyed, however, they were found to be either inappropriate or inadequate in meeting the needs of the students in question. Two major types were examined.

Self-Help Manuals

In self-help, how-to books the student must first read the book to learn how to study by his own interpretation of the material. It is my contention that the student who needs to improve his scholastic achievement would not be likely to read a book of this nature unless he were assigned to do so. Time spent at this activity is viewed as a deterrent and even more so if time is required for a second phase of validation or perception-checking with another "expert." This exercise, moreover, assumes that the student has the ability to read, comprehend and transfer the material to his particular needs. In addition, much of the material in print is directed toward an adult population.

Mimeographed Worksheets

The other type of commercial material available stressed the mimeographed-worksheet approach covering such topics as outlining and the use of reference materials. Some also included report writing under the heading of study skills. The subject matter in these lessons, unfortunately, was not relevant to the student's own particular course of studies. If the teacher did not help the student make the necessary transferences from these assignments to his own particular requirements, the exercise would be all too isolated. Some would catch the point.

Some would not.

The Problem

The problem then became one of writing lesson plans that were relevant to the student's own situation, cost-effective in terms of time spent learning the strategies, and time-effective in terms of presentation of the material by a teacher. In addition, these lessons not only needed to build in the transference of the strategies from one learning situation to another but also needed to be employed across a wide span of age groups. In short, the plans needed to reveal how studying is anything but a spectator sport.

Approximately twenty students from Grade Seven and Grade Eight participated in that first ten-lesson draft, six years ago. Another two hundred students from upper elementary and junior high school and roughly a dozen teachers have been introduced to the concepts in this package since then. It is only fair to say that the development of this particular strategies-for-studying unit would not have taken place without expressed feedback and encouragement from both the students and the teachers.

One student reports:

> What I did was take two pieces of paper and fold them in half lengthwise. On one side I put the words; on the other side I put the meanings. Then I flipped it over and wrote the words to the meanings.
>
> It helped me remember and skipped my mark from 65% to 100%.

If it is true that these strategies can make a difference, then it seems appropriate to determine whether a relationship exists between treatment, that is teaching these study strategies, and test performance. Access to this information would be useful to teachers and counsellors who are presently teaching study skills in the classroom and claiming little or no change in the marks that their students achieve on tests.

CHAPTER TWO

Review of the Literature

Attempts to explain how it is that people learn have been recorded since at least as far back as the time of Aristotle (384-322 B.C.). Since that time behavioral, metacognitive and social learning theorists to name only three have made contributions to our understanding of how it is we learn. These theorists have never reached total agreement on what learning is and how it is measured. It is agreed that learners are different in some way after they have learned something.

The "how" of learning has two foci in this project. First, learning is facilitated when the learner becomes an active participant in the process. Apps (1978) discusses learning by doing when he writes:

> It is an active process in which you must be involved. You do not learn effectively by sitting on the sidelines; you must be involved and participating in what it is you are trying to learn. (p.2)

Second, the teacher as the instrument of instruction and the way in which learning is typically evaluated in the school setting has at least a degree of significance. Both the teacher and the student contribute to the degree of learning.

The Model

This study, then, represents an effort to extract strategies for studying from a variety of resources that address themselves easily to improving test results. Theories of behaviorism, metacognition and social learning as well as published authors on the subject of study skills have influenced the development of the strategies-for-studying unit (see Appendix A-1) used in this project.

Skinner and Behavior Theory

If B. F. Skinner were to condense his work into twenty-five words or less, he might say that human beings are a product of their environmental reinforcers. If he were to elaborate, he might add that the probability that a particular behavior will occur is dependent upon the kind and the frequency of the reinforcement (Skinner, 1969). Intermittent reinforcement like variable-ratio reinforcement increases the likelihood that the behavior will again occur while fixed-interval schedules of reinforcement do not.

Operant conditioning and chaining can influence learning. In operant conditioning the organism receives the reinforcing stimulus only after producing the desired response. In chaining the events prior to the reinforcer serve to become secondary reinforcers. If the desired reinforcing stimulus of achieving a better test result was obtained, and certain new study behaviors that went into the preparation for this test were identified, then it should follow that if the secondary reinforcers were to be repeated in the process of preparing for the next test, a better test mark is more likely to result. Skinner (1969) writes:

The behavior of a person who has calculated his chances,

> compared alternatives, or considered the consequences of a move is different from, and usually more effective than, the behavior of one who has merely been exposed to the unanalyzed contingencies. The analysis functions as a discriminative stimulus. When such a stimulus is perfectly correlated with reinforcement, the behavior under its control is maximally reinforced. (pp. 121, 122)

Maximum reinforcement can have a variety of effects. Students who achieve the desired result every time they study are reinforced maximally for studying. Students who achieve the desired result every time they do not study are maximally reinforced for not studying. Students who study and consistently fail are being maximally reinforced, but the reinforcement is negative, and the most likely outcome is that these students will terminate studying completely. Students who do not score significantly better on tests for which they studied than those for which they did not, may make a conscious decision not to study. Students who do not study and yet pass the odd exam will maintain non-study behavior indefinitely. If it is assumed that study behavior is preferable to non-study, then this successful achievement on the test becomes an unwarranted consequence. Infrequent reinforcement sustains large quantities of behavior (Skinner, 1969). It is not only difficult to avert but it is also difficult to change the non-study behavior. "Behavior is the achievement of a person" (Skinner, 1974, p. 239), and analysis of the behaviors involved is advocated (Skinner, 1969).

The objective is to obtain maximum positive reinforcement. Analysis of the behavior is only one step. The next step is to construct a plan by making resolutions, announcing intentions and stating expectations. Better control of behavior is generated when the plan is available in visible form or recalled from time to time. Overt behavior is the most obvious measureable behavior. Educational objectives that are written in overt behavioral terms are the easiest to translate. Thus, interpretations of success or failure are readily made. The test mark provides evidence of the learning that has taken place.

Meichenbaum and Metacognitive Theory

"Bappy ... door ... all done." (Meichenbaum, 1978, p. 18). These words spoken by Donald Meichenbaum's son, David, at the age of two were the verbalizations he used in response to an instruction to place the apple skins he disliked into the garbage. "Bappy" was David's word for garbage; "door" was equivalent to "open." Meichenbaum (1978) reports that David verbalized aloud the first few times and then as the appropriate behavior became generalized to other situations, the verbalizations ceased.

He (Meichenbaum, 1978) sees this as a four-part sequence on the part of the child: hearing the instruction, translating what he heard, repeating it aloud as he performs the requested response and eventually dropping the vocalization as he understood it when he is sufficiently reinforced that he has the expected behavior correct.

Riding a two-wheeled bicycle for many is an automatic task. When one first learns to ride a bicycle every movement is conscious and deliberate. The specifics of "how to ride" are difficult to explain once the act has become automatic. Repetition to the point of proficiency brought the task to the point of automaticity. The connections that language originally made to help obtain the desired motor coordination have disappeared. The point here is that language is likely to have provided the initial guide.

Some writers (Flavell, 1976; Meichenbaum, 1978) refer to this language-intervention approach as metacognition. Scheflen (1973) uses the term "metacommunication." He explains, "Metacommunicative behavior, then, can be used to change, ..., or otherwise manage human behavior" (p. 127). As such it is a tool for learning that helps to point the student not only toward an active approach to the task but also toward a vehicle by which automaticity may result.

Bandura and Social Learning Theory

Successful performance is key. Bandura (1977) writes:

> In the social learning view, psychological changes, regardless of the method used to achieve them, derive from a common mechanism. The apparent divergence of theory and practice is reconciled by recognizing that change is mediated through cognitive processes, but the cognitive events are induced and altered most readily by experiences of mastery arising from successful performance.(p. 79)

Outcome and efficacy expectations influence personal efficacy.

Bandura (1977) defines outcome expectancy "as a person's estimate that a given behavior will lead to certain outcomes" and efficacy expectation as the person's "conviction that one can successfully execute the behavior required to produce the outcomes" (p. 79). The record of past achievement is a major base from which outcome and efficacy expectations are derived. Bandura (1977) explains:

> Successes raise mastery expectations; repeated failures lower them, especially if the mishaps occur early in the course of events. After strong efficacy expectations are developed through repeated success, the negative impact of occasional failures is likely to be reduced. Indeed occasional failures that are later overcome by determined effort can strengthen self-motivated persistence through experience that even the most difficult of obstacles can be mastered by sustained effort. The effects of failure on personal efficacy therefore partly depend upon the timing and the total pattern of experiences in which they occur. Once established, efficacy expectancies tend to generalize to related situations. (p. 81)

Records of successes and failures are but one source of personal efficacy information. In the opinion of Bandura (1977), "Of the numerous predictive cues that influence behavior..., none is more common or effective than the actions of others" (p. 87). If students observe each other and discover that those that studied obtained the highest marks, it is possible to conceive that study behavior might intensify in those that failed and did not study, but this factor cannot be singled out. The modelling effect of this vicarious experience can have negative as well as positive weight. The peer group that values marks of sixty per cent more than it values eighty per cent can set the pace for goals that are less than mastery level. Perceived personal efficacy becomes secondary. The teacher has the power to become the model by helping students to interpret their personal accomplishments, and by helping students to persuade themselves that if others can improve, they can, too. The two factors of perceived personal efficacy and modelling are obviously intertwined. According to Bandura (1977), "Human accomplishments result from reciprocal interaction of external circumstances with a host of personal determinants, including endowed potentialities, acquired competencies, reflective thought, and a high level of self-initiative" (p. 207). It is self-discipline and self-reinforcement that contribute to superior results as well as the reciprocal influence of the factors cited above along with a feedback process that involves both self-evaluation and evaluation from external sources. It is assumed that the student will select a mastery-level goal according to his personal experience and work toward improvement. Feedback data is used to confirm, negate, or change a continuous course of action.

Conclusion and applications. It is simply not possible to explain all learning via a single theory. Physical, cognitive, verbal, and social environments affect learning. Putting these various components of learning theory into a practical study-strategy therapy is the aim of this writer.

"Study Skills" or "Strategies for Studying" - what is the difference? The word "strategies" was intentionally selected over the word "skills." To the author, "skills" implies excellence; "strategies" implies methods or how-to techniques. Hayakawa (1941) a linguist, explains that the simplest way to take a new look at something is to find a new word to describe it. This is easier, he claims, than finding a new meaning for an old word. Having skills implies acquisition. In other words, skills are what a person has after he has practised sufficiently. Having strategies implies that a person has a repertoire of behaviors from which to call upon to perform the task at hand, and develop skills.

"Learning is the process in which the learner changes himself by continually reshaping his experience" (Vanier Institute of the Family, 1976, p. 3). This approach lends itself readily to a pattern for intervention with students. After taking inventory of personal scholastic achievement, performing a self-evaluation and setting appropriate goals, a plan that incorporates study strategies is put into effect. Subsequent achievement is measured against the goal. New goals, maintenance of strategies that work, and omission of strategies that do not become part of an ongoing systematic process by which to improve marks achieved. This writer postulates Figure 1 as a schematic representation of how the model operates as a full-circle approach.

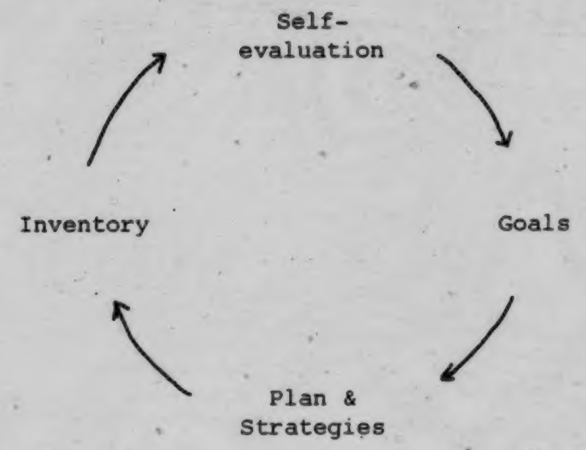

Self-evaluation
Goals
Plan & Strategies
Inventory

Figure 1. Schematic representation of the writer's postulated full-circle approach to studying.

Studying: Seven Critical Points

The strategies-vs-skills approach to studying allows the writer to address seven critical points in the literature:

(a) self-help manuals, (b) defining study skills, (c) the value of learning note-taking, outlining, etc., (d) the teacher/student symbiosis, (e) the evaluation format, (f) the student, and (g) language.

Self-help manuals. Books and more books have been published about "study skills." Orchard (1953), Morgan and Deese (1957), Morris (1973), Brown (1973), Locke (1975), Walter and Siebert (1976), Hodges (1979) and Grassick (1983) are but a few of the authors that have postulated a "how to" framework by telling the student what to do when he studies.

Orchard (1953) presented some tips about studying. He drew attention to such items as adequate lighting, use of libraries, confidence and asking questions. The book is not referenced. It is directed at the school and college audience.

Morgan and Deese (1957) are frequently referenced in the literature for their college-student manual on the how-to of studying. SQ3R is the formula prescribed for study. "S" stands for survey. This directive tells the reader to read the title, recall previous knowledge about the topic, decide its personal importance, and skim the headings, topic sentences, diagrams and photographs. "Q" tells the reader to raise questions about the selection based on the skimming. "R_1" tells the reader to now read to find the answers to these questions. "R_2" tells the reader to review the answers and "R_3" tells the reader to recite them. SQ3R requires a language intervention approach. Other topics like scheduling use of time, taking notes and using libraries are also included.

Learning and studying is the emphasis of a book by Morris (1973). It starts off with a pep talk on self-concept and its relationship to improvement and motivation to improve. Learning is defined as "something that goes on inevitably" (p. 21) and study is something that is done by conscious choice. Hints are given about note-taking and the use of libraries. Different methods of study are explained for different subjects. The book is not referenced but does contain a bibliography. It appears to be directed at high school students, though some junior high students might benefit.

Fifty-eight pages are held between the covers of the book written by Brown (1973). His aim was to create a brief compilation of study techniques for college students that work to improve grades. Eight chapters include such topics as SQ3R, instructions for studying various subjects as well as goal-setting and study-scheduling. Learning is something that occurs with practice. In the school setting it is measured by an exam. Material to be learned must be repeated as often as is necessary for remembering to occur. He further advocates that it is wise to know the precise meaning of technical terms such as those that appear in science, and advises students to learn to anticipate the nature and content of teacher-made exams.

In 1975 Locke wrote a book about studying because he felt that the previous study skills texts failed to deal with the "mental operations required for effective study" and failed to help students cope with "study motivation problems" (p. xi). Learning is defined as "understanding plus memory" (p. 65) and studying requires mental effort. Locke intended his book to be used as a basis from which to learn. If the student were to do the prescribed exercises, he should then be able to transfer the exercises to other courses. The book is not referenced and does not contain a bibliography.

Walter and Siebert (1976) directed their book at high school students. They include tips on setting goals, writing tests, studying, writing papers, and making friends. Some chapters are referenced, SQ3R has been exchanged for SQ4R, and readers are advised to schedule their time so that there is time for study, time for themselves, and time for friends.

Increasing vocabulary, taking notes and making outlines are just three of the thirty topics Hodges (1970) included in a combination teacher lesson-plan/student how-to manual. The book is directed at high school students who plan to attend university. It emphasizes reading as the primary skill necessary for successful achievement. The textbook is not referenced. It is based on the personal experience of the author. Recitation is considered to be valuable to remembering.

Grassick (1983) has put together a comprehensive how-to manual for university students based on the Exam Skills Workshop he runs at the University of Calgary. At least four hundred students have been involved in the workshop, and Grassick reports that at least ninety-five per cent have found the program helpful. The three main sections of the book elaborate on preparation for exams, writing exams and the anxiety associated with exams. Such topics as "The five review strategies," "Memorizing stuff," "Doing well on essay tests" and "Why you are anxious" are included. The student is advised that preparation for a test should be determined by the nature of the test. Grassick explains:

> If you are going to be required to reproduce tracts of your test verbatim, then memorizing the textbook is relevant. If you are going to be required to summarize a particular topic, then summarizing is a relevant study practice. Summarizing, memorizing, and other activities are useful only in preparing for specific tasks. They are worse than useless preparation for other activities. If you're going to have to turn cartwheels, you don't practice handstands. (p. 3)

Most of the writers advocate goal-setting, time-lining, self-evaluation, past experience, planning and test preparation as keys to improving achievement. Some also indicate that self-image is a factor. Others advise recitation. There appears to be an underlying basic assumption that if the person takes the time to read about improving study skills, the new behavior will result. Some students may not be able to synthesize new knowledge in this manner.

Which skills are study skills? Study skills are defined and described in a wide variety of ways. The specific emphasis of the authors appears to be determined by their theoretical leanings. Cognitive approaches deal with feelings and attitudes (Locke, 1975; Morris, 1973). Behavioral approaches deal with practice and setting goals (Brown, 1973). Reading specialists like Hodges (1979) advocate that skill development in reading is the most important study skill. Language development by recitation is recommended by Morgan and Deese (1957), Brown (1973), and Walter and Siebert (1976). Walter and Siebert (1976) and Grassick (1983) combine several approaches. The specific topics treated as study skills include use of the library, note-taking, scheduling, word study, listening, outlining, writing reports, help in spelling, memorizing, mnemonic coding and reading skills. The list is neither definitive nor rank ordered.

Strang (1955) states that many classroom teachers see the value of conducting supervised study but do not know how. Devine (1981) believes that teachers do teach study skills but adds, "Unfortunately, much of this instruction is unorganized, unsystematic and unfocused" (p. 7). What Devine is advocating is a curriculum of study skills that sequentially extends from Grade Four through to high school so that there is no misunderstanding as to the local educational definition of study skills and so that items can be earmarked as introductory, review or mastery level skills.

Devine (1981) also suggests that teachers may view reading assignments, class discussions, assigned exercises, and tests as instruction in study skills. What may be necessary is how-to instruction: "How to read an assignment, how to deal with new vocabulary, how to listen to teacher presentation, how to take notes, outline, review, participate in discussions, and how to take a test" (p. 7).

Value of learning note-taking. Writers such as those listed above include such things as taking notes, reading effectively, being in a well-lighted area free of distraction, outlining and having the necessary equipment as part of study skills. A review (National Education Association of the United States [NEA] 1975) of the research done between 1920 and 1940 concludes that items such as independent guided study, freedom from distraction, note-taking and outlining have inconclusive value. On the contrary it is the opinion of Grassick (1983) that instruction in taking notes proves to be beneficial.

The teacher/student symbiosis. "Many classroom teachers recognize the value of supervised study but do not know how to conduct supervised study periods" (Strang, 1955, p. 8). Apps (1982) alleges that students know how to be taught but do not know how to learn. The NEA (1975), Devine (1981) and Crawford (1978), advocate that learning how to learn is the single most important factor in learning and in the same breath, designate teachers as being the key in the process. In support of the view the NEA (1975) warrants:

> After 1940 supervised study became more a part of student responsibility than it has been before. In order for it to be effective, however, it still requires teacher guidance. If they are not given sufficient help, students tend to persist too long in their initial trial-and-error habits.(p.9)

Robinson (1978) states that "some students need a great deal of ... guidance before they incorporate the strategy into their own plans of study" (p. 163). Torgenson (1982) directs attention to the inefficient learning habits of diagnosed learning disabled children. Their passive and/or disorganized approach to learning suggests three types of intervention: incentives, orienting tasks and cognitive strategies.

Hunter (1979) gets even more specific. She not only cites the teacher as the one responsible for increased retention on the part of the student but also provides a formula. To make increased retention happen it helps if the teacher provides the appropriate schedule of practise with a pleasant presence of feeling and work that is meaningful to the learner. Positive transfer from one set of learning to another is staged or created by the teacher.

The task is admittedly more difficult when the degree of meaningfulness or pleasantness attached to the original learning was anything but positive. One personal experience illustrates this point further. A reading clinician reported that one of his female clients did not score well on one section of a comprehension test. The student's voice quavered as she read aloud. She then proceeded to answer the questions in a louder-than-normal tone of voice and used her personal family experience for answers rather than story content. The clinician concluded that the story was too laden with emotion for the child to be able to do well. Had the family experience been pleasant, a different repertoire of responses is most likely to have resulted. Had the clinician anticipated the response the particular passage in question may not have been used and some important information about the child may not have been found.

The point here is that it is unrealistic to expect the teacher to be able to account for the degree of meaningfulness or pleasantness on an item of instruction with respect to each highly individual member of the class. Some students will see more need for mathematics than others. It can be as simple as that. Robinson (1978) sums it up another way. He states "The printed words mean nothing unless the reader brings meaning to them" (p. 119).

Another factor in the positive or negative degree of the symbiosis is the extent to which the student views the teacher as a model. The modelling situation should contain incentives to which the subject can attend and later imitate. This happens more readily when the model is reinforced or controls the reinforcement (Mikulas, 1972). Modelling is often the most efficient way to get a behavior to originally occur (Bandura, 1969).

Hamblin (1981) discusses modelling from the perspective of the teacher. He writes, "Limited opportunity for contact with pupils in our roles as subject teachers in the secondary school, restrict our opportunities to help pupils understand their preferences in study methods and integrate them into a productive learning style." (p.2)

The teacher and the evaluation modus operandi. Retrieval is the most common method of measuring what a student has learned (NEA, 1975). Guszak's study (cited in Robinson, 1978) examined the questioning strategies used by elementary teachers to test comprehension. The list was reduced to six basic classifications: (a) recognition, (b) recall, (c) translation or regurgitation, (d) conjecture or prediction, (e) explanation or influence, and (f) evaluation or judgement. Recall questions were found to be the most popular.

The type of test can influence the performance (Robinson, 1978). Robinson (1978) writes:

> Some students may "comprehend" better when faced with one type of test format than another. Some may do better with a given format dependent upon the nature of the material, the testing conditions, and/or the expectations of the instructor. (p. 120)

What, then, is learning? According to the statements above, learning in the school setting is more a factor of how teachers measure it than all the other elements put together.

Two common school-related learning tasks are comprehension and retention. What if the teaching objective requires comprehension and a recall-type test item is the single measure of learning? Robinson (1978) answers, "Be certain that students do comprehend material when it is before them - open book - before making judgements about comprehension based on recall" (p. 121). Is the one who scored the highest mark on the Social Studies test, then, the one who learned the most?

What evolves as the most logical solution to higher marks is helping students to make educated guesses about the nature of the questions and their content. In short, teach students how to "psyche out" their teachers. This strategy offers a learning support system to the student across a wide variety of learning situations.

In ~~the~~ postulated model, the "psyching-out" lesson qualifies as part of the planning phase. The next step is choosing an appropriate strategy. Preparing for a vocabulary test in Language Arts calls for one strategy; preparing for an essay exam in Social Studies calls for another. "Learning how to learn is surely as important an outcome of education as the facts learned" (Strang, 1955, p. 8) and knowing how to pair strategies with how learning is to be measured is surely part of that learning.

The student. Strang (1955) acknowledges the uniqueness of each student. She writes, "The learning process is highly individual. Each student may be at a somewhat different stage in effective study methods; each may have worked out methods that make sense to him" (p. 7). A baseline evaluation of what is helping and what is not could prove beneficial. "Late hours spent in study and failure to complete assignments may make a conscientious pupil depressed and anxious" (Strang, 1955, p. 18). Family support or the lack thereof can be significant (Apps, 1982; MacDougall and Herman, 1977-78). Attitudes toward learning can stand in the way of success; the person who is anxious or feels unsure is likely to perform poorly (NEA, 1975; Walter and Siebert, 1976; Hamblin, 1981; Grassick, 1983). The student who is not committed to his own improvement will not improve (Walter and Siebert, 1976).

The degree to which the student feels control over his environment can be strategic. There are those who would choose to fail as a matter of exhibiting control. There are those who fail who fall into a category that one might call not-my-fault failure. These students fail because someone fails them, not because they fail themselves. Hamblin (1981) suggests that some students have a legitimate reason for thinking this way. He submits:

> Some of the apathetic pupils may have a world view in which luck is unduly prominent. This may be the product of interaction in the classroom which suggests that the antecedents of success lie in the hands of others. The pupil then feels absolved from responsibility for his difficulties, and can blame others with a good conscience. (p. 3)

Another group of students study for tests, fail tests, and wonder what went wrong. They have no evaluative procedures for changing the way they prepare for tests. There are those who have a history of unavoidable aversive events like failing tests. A sufficient number of these experiences can result in passive resignation or learned helplessness (Mikulas, 1972). These statements suggest that helping the student take control over his own learning in a systematic and positive way can be as crucial a part of the study process as strategies for remembering the answers to the recall-type examination questions.

Learning the language. Aebli (1970) describes how conceptual construction occurs. It happens ...

> ... under the guidance of a teacher who communicates with the learner by means of language. Even if the learner interacts with the physical traits of the learning situation (objects, pictures), the verbal element is essential, both as a means of communication, and as an instrument of individual representation and data-processing. (p. 14)

Beck (1975) advocates mastery of the language as a basic fundamental aspect of human development. Learning to speak the English language is a complex intellectual task that - irregular plurals, irregular verbs, and all - many children master by the age of five. Understanding and speaking must come before reading and writing (Hughes, 1968).

Assessment of language development is typically divided into two parts: expressive and receptive language. Expressive language is the measure of verbal competence; receptive language is the measure of understanding. This writer is bilingual. At the age of six, if memory serves to be correct, both languages were equally developed. Now in adulthood English is by far the stronger language. The second language of the writer is seldom spoken or heard, and it is most apparent that the receptive language has been better retained than the expressive. If communication is the primary function of language as stated by Donahoe and Wessells (1980) and Hughes (1968), then the second language of this writer is hardly functional. Donahoe and Wessells write, "Simple exposure to adult speech, such as person-to-person speech on television, appears to be insufficient for the development of transformation rules in children" (p. 395). This statement suggests that the second language of the writer could become functional once again were it to be practised as a spoken language.

Morgan and Deese (1957) recommend recitation: "As you read, stop at intervals to recite the substance of each major section of a chapter. When you review for examinations, again make recitation a substantial part of your study procedure" (p. 31). The Spitzer (1939) study with a sample of several thousand high school students tested the value of recitation. It was found that the group that recited briefly immediately after reading could remember more in sixty-three days than the group that did not recite could remember in one day.

Hughes (1968) discusses a study comparing two types of language labs. In the "active" lab the student taking second-language training listened to recordings and then recorded his imitations. In the "passive" lab the student listened and imitated but did not record. The passive-lab student did not have access to feedback. This resulted in a lack of monitoring and consequently poor pronunciation and poor comprehension. Bandura (1977) writes:

> Although productive speech depends upon knowledge of linguistic rules, such knowledge does not automatically transfer to speech performance.... Learning and performance are governed by different component processes. To perfect a productive skill, one must develop the ability to convert knowledge into appropriate performance. Hence, language proficiency is best developed by modeling combined with language production and corrective feedback. (p. 179)

The Wechsler Intelligence Scale for Children contains a subtest called "Information" whereby children are asked to orally provide information about their world as they have grown to understand it. Thus, language in our society is seen as being a component of long term memory and subsequently a component of intelligence.

The writer is often awed by students who are unable to use the vocabulary of mathematics appropriately in a sentence, and who are also unable to provide answers to mathematical questions when presented orally but can do so when presented in print. Perhaps it is the teacher who is obtaining the most practice in learning the language of the subject when it is the students who need to practise it most. It is the students who need to prove they have learned it and it is the classroom teacher who can offer feedback.

Development of expressive and receptive language can vary with the student. Reading vocabulary can differ from speaking vocabulary which, in turn, can differ from writing vocabulary. Perhaps a practice or rehearsal component in the spoken and written format can lead to improvement.

Closing Remarks

What, then, does the student need in order to have a better opportunity to improve?

1. A commitment to improve.
2. A positive feeling of control over learning.
3. Study strategies that require active participation.
4. Feedback that makes connections between study strategies and test results.
5. Strategies to predict and rehearse for tests.
6. An expressive and receptive knowledge of the language.

What the teacher needs is a repertoire of strategies all the way from the lesson plan to the test to help make these six things happen. These strategies can then be selectively taught according to the needs of the subject as well as the individual needs of the student. Furthermore, writers cited tend to agree that the teacher plays a major role in the process of teaching students how to learn and in the evaluation of learning.

The advocated strategies-for-studying model requires behavioral analysis and language intervention. It incorporates self-initiative, self-evaluation and feedback as a teacher-student partnership.

CHAPTER THREE

The Experimental Design and the Statistical Procedures

The purpose of this study was to compare experimentally the effectiveness of providing instruction in strategies for studying with no instruction at the Grade 5, Grade 7 and Grade 8 levels. The program used to teach the strategies is in Appendix A.

The Nature of the Sample

Six classes at Graminia School in the County of Parkland participated in the study. One class at each grade level received the prescribed instruction in strategies for studying (experimental group) and one class at each grade level received no treatment (control group). Two Grade Five classes (5A and 5B), two Grade Seven classes (7A and 7B), and two Grade Eight classes (8A and 8B) participated. The class with the A designation in each case was the control group and the class designated as B was the experimental group. The students were assigned to each class randomly and heterogeneously, though some students were separated for behavior reasons.

The Nature of the Instructional Materials

The package of lesson plans for teaching strategies for studying is contained in Appendix A. It contains instruction in determining a suitable place to study, setting of short-term and long-term goals, budgeting time, memorizing, remembering, and specific techniques for studying in each of the four core subject areas of Science, Social Studies, Languages Arts and Mathematics. The investigator felt that this package was a fair representation of the strategies that contribute to achievement as measured by tests typically used by classroom teachers.

The Testing Instruments

The scores used in this study came from teacher-made tests. Common exams were set for the students in Grade Five Science, Grade Seven Math and Languages Arts, and Grade Eight Math, Science, Social Studies and Language Arts. Teachers scored the tests for the classes that they were responsible for teaching. These marks were submitted to the investigator for analysis.

Procedure

The counsellor taught the study materials from the prescribed instructional package to each of the 5B, 7B, and 8B classes. It was necessary for the counsellor to take time out of the regular instructional program in order to teach the lessons in the program since no regular time is set aside for him to do this on the time table. The teacher regularly assigned to the class was required to leave the classroom during this instructional period since it was felt that teachers might alter the routine structure of their exams and, thereby, add a confounding variable to the investigation. If exams were already prepared, teachers were allowed to stay in the classroom. No teachers stayed.

Twelve sessions were held with each of the three classes over a two-month period: November and December of 1983. The common exams were given in January of 1984.

At the onset and at the conclusion of the study students in the experimental group were asked to complete a questionnaire which was prepared by the investigator. A further follow-up questionnaire was administered four months after treatment.

Treatment of the Data

At the Grade Eight level test scores in Mathematics, Science, Social Studies and Language Arts were combined for 8A and for 8B. At the Grade Seven level test scores in Mathematics and Language Arts were combined. This was done in order to provide the largest N possible over which to conduct a t test for significance of the difference between the means of two independent samples. At the Grade Five level test scores in Science were submitted for statistical analysis. Only subjects in which common exams were administered were analyzed.

The following null hypothesis was tested: there is no significant difference between the mean test scores of the control group and the experimental group.

Follow-Up Investigation

The teacher of one of the control group classes, Grade 5A, requested the experimental group instructor, the school counsellor, to teach her class the study strategies program. The program was taught in like manner to the original investigation. Test scores were collected before and after treatment (January and March) and the follow-up questionnaire was administered after treatment along with the three experimental classes. Test scores in Science were submitted for t test analysis and the following null hypothesis was tested: there is no significant difference between the mean test scores of the January test and the March test.

CHAPTER FOUR

The Results of the Investigation

Comparison of Groups Before Treatment

It was assumed that the distributions of the variables in the population from which the samples were derived were normal.

Comparison of Experimental Group Before and After Treatment

Procedure

The students in the experimental group (EG) were asked to complete a questionnaire (see Appendix A) concerning their study activities. The written responses of the students were then compared student by student and rated by the writer.

Results

A summary of this inventory appears in Table 1.

Conclusions

Examination of Table 1 led to the following decisions:

1. At each grade level students in the EG became more specific in describing their own study activities after treatment.

2. After treatment at least one fifth of the students in the EG reported that they now began their study earlier prior to a test. The greatest number of students to begin studying less time ahead was found at the Grade Eight level.

3. At least one third of the EG felt they spent more time studying after treatment. At Grade Seven roughly two thirds of

Table 1

Summary of Comparison of Student Inventory After Treatment

Variable	Grade 5B[a]	 7B[b]	 8B[c]
Written description of study activities			
more specific	70	29	36
no change	30	58	55
less specific	0	13	9
Time ahead prior to test			
more	56	18	36
no change	35	76	36
less	9	6	28
Amount of time spent studying			
more	52	65	36
no change	22	23	36
less	26	12	28
Family help before treatment			
yes	78	76	73
no	22	24	27

(table continues)

Variable	Grade 5B[a]	 7B[b]	 8B[c]
Family help after treatment			
yes	91	82	82
no	9	18	18

Note. The numerical values are stated in percentages rounded to the nearest whole number. All the students did not hand in inventories before and after treatment. Only those that could be matched were tabulated.

[a] n = 23

[b] n = 17

[c] n = 11

the students in the EG spent more time in study. An average of 21.8% spent less time studying after treatment with the least percentage found at Grade Seven; the percentage at Grade Five and Grade Eight were higher than this average.

4. Students who received help from family members averaged 84.6% after treatment. Before treatment only 75.6% on the average received help. The smallest increase in family help occurred at Grade Seven.

Comparison of Groups After Treatment

Two procedures were applied. The first procedure involved the statistical calculation of data. In the second procedure information obtained from a follow-up questionnaire was tabulated.

First Procedure

The F test of homogeneity was applied to test the following null hypothesis: the two samples at each grade level came from populations with a common variance. Raw data and calculations appear in Appendices C-1 through C-3. Table 2 reveals that the null hypothesis was accepted at each grade level. As a result the next step in the analysis could proceed.

The *t* test was then applied at each grade level in order to test the following null hypothesis: there is no significant difference between the mean test scores of the control group (CG) and the experimental group. Table 3 summarizes the *t* test analysis.

Table 2

Summary of F Test Analysis

Grade	Variance	F	df	Critical Value	Null Hypothesis
5A	14.204	1.02	29	1.64	Accepted
5B	14.496		26		
7A	16.678	1.05	55	1.57	Accepted
7B	17.489		55		
8A	16.4	1.22	103	1.39	Accepted
8B	13.4		100		

Table 3

Summary of t Test Analysis of Test Scores

Grade	V	$\overline{X}$	df	Critical Value	t	Null Hypothesis
5A	27	58.900	55	0.05 = 2.005	0.97	Accepted
5B	30	62.670				
7A	56	61.964	110	0.05 = 1.983	2.13	Rejected
7B	56	68.857				
8A	104	65.8	203	0.05 = 1.98	0.18	Accepted
8B	101	65.4				

Conclusions. Examination of Table 3 led to the following decisions:

1. Grade Five: The null hypothesis was accepted.
2. Grade Seven: The null hypothesis was rejected.
3. Grade Eight: The null hypothesis was accepted.

Interpretation. There was a significant difference between the EG and the CG in the mean test scores at Grade Seven when the 0.05 critical value was applied. There was no significant difference in the mean test scores at Grade Five and at Grade Eight.

Second Procedure

A follow-up questionnaire was administered to the students of the EG four months after treatment. A copy of this questionnaire appears in Appendix E.

Results. Tables 4 through 14 reveal the data collected in this questionnaire. Tables 4, 5, 6, 7 and 8 provide numerical summaries of the responses. Tables 9, 10, 11, 12, 13 and 14 contain the statements written by the students in response to the questions.

Conclusions: 5B. The self-reports of the students indicate the following:

1. The majority of the students viewed the instruction positively (see Table 4).

2. About one third of the students reported that they increased the amount of time spent in studying (see Table 4).

Table 4

Summary of Student Self-Perceptions Following Treatment

Variable	Grade 5B	 7B	 8B
Effect on Student			
Positive	77	54	82
None	10	38	18
Negative	13	8	0
Time spent studying			
More	33	38	50
Same	64	58	45
Less	3	4	5
Marks			
Better	43	42	59
Same	54	54	41
Poorer	3	4	0

Note. The numerical values are stated in percentages.

Table 5

Summary of Student Responses to Part II, Question 1 of Study Strategies Follow-Up:

Variable	Response Yes	 No
Has the program changed the way you study?		
Grade 5B	57	43
Grade 7B	65	35
Grade 8B	77	23

Table 6

Summary of Student Responses to Part II, Question 2 of Study Strategies Follow-Up:

Variable	Response Yes	 No	 Don't Know	 No Response
Would you recommend this program to others?				
Grade 5B	83.3	13.3	--	3.3
Grade 7B	77.0	11.5	11.5	--
Grade 8B	95.0	--	--	5.0

Table 7

Summary of Responses to Part II, Question 3 of Study Strategies Follow-Up:

Lesson	Grade 5B	 7B	 8B
My Study Chair	3	4	5
Remembering	37	8	22
Studying Science	0	0	5
Studying Social Studies	7	8	5
Goals and Rewards	33	30	5
Time-lining	0	11	13
Studying Math	3	0	5
Day Plan	7	8	0
Cheat Sheet	0	27	31
Studying Language Arts	0	0	0
The Kitchen Technique	0	4	9
Spelling[a]	7	0	0
No Response	3	0	0

Note. The numerical values are stated in percentages. Students were allowed to select only one response.

[a] Two students in Grade 5B added spelling to the available responses.

Table 8

Summary of Responses to Part II, Question 4 of Study Strategies Follow-Up:

Lesson	Grade 5B	 7B	 8B
My Study Chair	17	19	18
Remembering	7	8	9
Studying Science	10	0	0
Studying Social Studies	10	0	0
Goals and Rewards	7	0	5
Time-lining	10	4	5
Studying Math	3	4	11
Day Plan	23	42	27
Cheat Sheet	10	15	10
Studying Language Arts	0	0	5
The Kitchen Technique	0	4	5
No Response	3	4	5

Note. The numerical values are stated in percentages. Students were allowed to select only one response.

3. Almost one half of the students felt that they were doing better after instruction in strategies for studying (see Table 4).

4. More than half of the students stated that they had changed the way they study (see Table 5).

5. A vast majority recommended the program to others (see Table 6).

6. "Remembering" and "Goals and Rewards" were the lessons viewed as being the most helpful (see Table 7).

7. "Day Plan" and "My Study Chair" were viewed as being the least helpful lessons (see Table 8).

Conclusions: 7B. The self-reports of the students indicate the following:

1. Slightly more than half of the students viewed the instruction positively (see Table 4).

2. More than one third of the students felt that they had increased the amount of time they spent studying (see Table 4).

3. Almost one half of the students said that their marks were better after receiving instruction in strategies for studying (see Table 4).

4. Two thirds of the students reported that the program had changed the way they study (see Table 5).

5. More than three quarters of the students recommended the program to others (see Table 6).

6. "Goals and Rewards" and "Cheat Sheet" were viewed as being the most helpful lessons (see Table 7).

7. The "Day Plan" lesson was thought to be the least helpful (see Table 8).

Conclusions: 8B. The self-reports of the students in the Grade Eight EG indicate the following:

1. More than four fifths of the students viewed the instruction positively (see Table 4).

2. One half of the students declared that they spent more time studying after treatment (see Table 4).

3. Three fifths of the students stated that their marks had improved after treatment (see Table 4).

4. More than three quarters of the students reported that instruction in study strategies changed the way they study (see Table 5).

5. A large majority of the students recommended the program to others (see Table 6).

6. "Cheat Sheet" and "Remembering" were viewed as being the most helpful lessons (see Table 7).

7. "Day Plan" and "My Study Chair" were reported to be the least helpful lessons (see Table 8).

Discussion of tables 9 through 14. These tables provide the written responses of the students to Part II of the follow-up questionnaire.

1. Table 9 reveals the self-reported changes in study activities. The changes reported indicate that the students benefited directly and indirectly from the program.

Table 9

Statements by Students Responding "Yes" to Part II, Question 1, of Study Strategies Follow-Up

Statements
Grade 5B
You seem to be working more into it.
There is new ways of studying.
I study more of all the subjects.
I used to just read through my notes and that was it but now I study not just read.
Before I used to study in a hard chair.
Because now I know how to study right instead of the wrong way.
It helped me get better marks.
It helped me study more.
It has changed my way of studying because it has told me and showed me that my marks will go up.
It has encouraged me to do more studying.
It has changed because I always take a break after I do some work better study longer.
I study much more.
It made me study longer.
By telling me where to study and how to study.
It made me study more.

(table continues)

Statements
Because I used to study in front of a T.V.
It taught me how to study.
Grade 7B
It told me how to study my notes instead of memorizing them.
It showed how I should study to get better marks.
Now I do the steps I was shown.
Yes I now have my own place to study.
I study longer.
Because my marks are sort of low I study more.
It has made me study more on the night before the test.
I study less time but more days.
I study properly now, but marks are the same.
When I study now I sit up instead of lying on my bed etc.
I study more now.
It's easier to study.
I wouldn't say I study more but this has taught me ways to study better.
I now study a little bit more, but before I studied enough it's just now a little more.
Because I want to get better marks.
Yes, but not anything major but it has made me more conscious.
I study longer and I study a lot more (off and on) too.

(table continues)

Statements

Grade 8B

It made it easier to study long tests.

I have studied more and remembered it.

Well I use the methods that the teacher told us about.

Time line I used and cheat sheet.

It has not changed the way I study but I now take better notes.

I use the procedure I was taught and found it worked better.

I get better marks by using some of these helpful hints.

Before I couldn't understand what "study" meant, the program showed me ways to "study".

I find it easier to understand things.

Because I use the cheat sheet on some tests.

I know what kind of answers to look out for on a test.

I use my time better.

It made me learn how to understand better.

I pick a quiet place with all my supplies.

Yes, I spend more time and better.

I used some methods that were more useful and easier to memorize.

I study more carefully and more wise than before.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

Table 10

Statements by Students Responding "No" to Part II, Question 1, of Study Strategies Follow-Up

Statements
Grade 5B[a]
I just study normal when a test comes up.
I always study my way and it's hard to change.
Because I studied before.
Well I start studying the same time every night so it doesn't make a difference.
I do not study any way you told us.
I do not study anyway.
I am happy the way I study before.
Grade 7B[b]
Because I always have studied this way and I don't feel like changing.
Because I studied like that before we were taught the program.
I just study the same as I always did.
I study the same as usual and will probably pass with honors.
I think I study enough on my own.
I still study the same and get the same marks.
I still study the same way.

(*table continues*)

Statements
Grade 8B[c]
In a way I look for more things, I psyche out a teacher.
I studied the same before.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

[a] Six students from Grade 5B did not provide an explanation.

[b] Two students from Grade 7B did not provide an explanation.

[c] Three students from Grade 8B did not provide an explanation.

Table 11

Statements by Students Responding "Yes" to Part II, Question 2, of the Study Strategies Follow-Up

Statements
Grade 5B[a]
Yes because it encouraged me a lot.
If they aren't doing too good this will help them.
Because it helped me get better marks.
Because it is a good program.
Well if someone needs help in studying this would be very helpful for them.
Yes, because some people need to learn how to listen when they're told to.
It might get them to study for tests more and get better marks.
It is very good.
It is good for us.
Because, it might give you better marks.
It would help them study.
Maybe they work the same.
It may help them with their study habits.
Because it is very helpful to my grades.
Because if I told them it would help them to study.
They might learn to study and get better marks.

(*table continues*)

Statements
Because some people don't know and maybe want to learn.
Because it can change other kids minds.
If you are a useful person with time it helps.
It might help them.
It would for people who study but I don't really study.
To help others in the same way.
I would for people that need it but not for people who don't.
Because it might help others.
Well if it is helpful to others.
Grade 7B[b]
Because my 2nd report card was all good except one subject.
It might help a lot of people who need it.
I would recommend this to others because it gives you a great perspective of how to improve your marks.
I would because some people might not have any technique of studying.
Because it may help them.
They then learn how to study before it's too late.
Because it would help their marks.
I do quite well on my tests so I feel it isn't fair that someone does good and someone does rotten. So the other person would have chance to be taught how to make studying beneficial.

(table continues)

Statements
Because it might help other people in learning.
It helps you be aware of ways of studying.
Because it helps.
Because you learn something.
It helps some people.
It may help others.
Because some people will change.
Well if it has helped me it would be worth a try on others.
Maybe I would. It depends to who, I guess so it can only improve.
Because it is very helpful.
Yes, because it may help some of them.
Yes because I think it works.
Grade 8B[c]
Gives them choice of how to do it and see if it gives him help or not.
It would have effects on the person, they would remember it better.
It helps study.
It was helpful if you had problems studying and most students do.
That's pretty obvious. In most cases it works.
It may help them to improve their marks.

(*table continues*)

Statements
Because it might help others.
It makes studying.
Because some people really don't have any idea how to study and it tells you ways to study.
Because they might learn something.
Helps your study and it makes your marks go up.
So they could get better marks.
It is a good.
Yes because it helped me to make things easier to remember.
Because some people spend hours studying.
Because less people would fail their final exams.
It gives you a better outlook on studying.
Because it helps you understand how to study better and to make you understand it fully on what you are studying.
Maybe it might help to help others.
Yes because it is very helpful.
It helped me a lot more.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

[a] One student in Grade 5B did not respond to this question.

[b] Three students in Grade 7B replied that they did not know if

(*table continues*)

Statements

they would recommend the program but were willing to give the idea the benefit of the doubt.

[c] One student in Grade 8B did not respond to this question.

Table 12

Statements by Students Responding "No" to Part II, Question 2, of Study Strategies Follow-Up

Statements
Grade 5B[a]
I would probably not know how to give a program to others.
Because I do not think it would make a difference.
It really depends on their age because they might not understand.
Because when you have been studying for five years you know how to study.
Grade 7B[b]
Because it did not help me much.
I didn't like it. It wasted school time.
Grade 8B
No students responded "no" to this question.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

[a] One student did not respond to this question.

[b] One student did not provide an explanation.

Table 13

Statements by Students Responding to Part II, Question 3, of Study Strategies Follow-Up

Statements
Grade 5B
Remembering[a]
Well it taught me that I should study more to remember.
Studying.
I have been remembering a lot more now.
I don't know.
You won't have to forget all the time.
I can remember more things about what I am studying.
Because it showed me all the points in remembering.
I now remember to do my homework and I look away and look back and then it works.
It was helpful so I could remember.
Then I didn't have to carry much homework.
Goals and Rewards[b]
I thought I could do something, did it, and felt good.
It made me study harder.
To get it done.
Because I learned a lot.
It taught me lots of things.

(*table continues*)

Statements
It was helpful because if I give myself a goal I know I'll get a reward.
After a period of work you need time to rest.
Because it makes me want to get 100%.
It made me want to study.
Studying Social Studies
I get better marks.
Because it was difficult to study Social.
Day Plan
It helped me plan my studying.
It made it so I could find time for studying.
Spelling[c]
I used to get 64% on a final test now I get 85 or 94 sometimes 100%.
I used to look at the words once now I look and write the words 5 times each.
My Study Chair
Now I won't get bored.
Studying Math
For one thing math is easy for me. I don't know how this is helpful.

(*table continues*)

Statements
Grade 7B
Goals and Rewards
It inspired me to study.
Because if you want something you study for it.
When I was studying I'd say to myself - "If you study this for 10 minutes you can eat a banana split".
It made me want to do my work so I have something to look forward to.
Because I had something to work for.
It made me look forward to something when I was done.
What do you mean? This isn't meant as a joke. I'm confused.
It made me study harder.
Cheat Sheet
Because then your mind doesn't go blank even if you did study.
Because if I did not remember I could look on the back.
I didn't have to study that hard.
Because it's just a matter of putting words in the blanks.
Because if I forgot something it would be on the back.
This helped in French. I couldn't use the Goals and Rewards because my parents think I should get 90 in everything and if I do they're proud of me. If I don't they say I tried my best. No one needs a reward, their reward should be satisfaction (heard that one before, Eh!).

(table continues)

Statements
Because this way you put down everything you know and that should keep you on your test.
Time-Lining
It helps me plan my homework and studying. The organization part.
The to study.
I was able to figure my time better.
Remembering
I memorized most of the important stuff on the test.
This is usually the way I do a test.
Studying Social Studies[d]
It helped me to remember some things.
Day Plan
So you can give yourself so much time to study ex an hour and a half.
It helped plan my time out.
My Study Chair
It was helpful because before I was always sitting in hard chairs so I wasn't comfortable but now I can study better.
The Kitchen Technique
Just the way you are remembering.

(table continues)

Statements
Grade 8B
Cheat Sheet
It helps remember things.
Because then I had some notes on the back of the paper to refer to.
It helped more.
It was something I understood and I did it anyway.
Because you forget as soon as you get to that question.
It made me think of what I had learned and studied.
Because I studied that and then I usually forget about whatever I am studying.
Remembering
I was able to remember things better.
It was easiest for me.
I remembered it better.
My superior notes.
It helped me remember stuff better.
Time-Lining[e]
It helped me to see what I was doing with my time and what I could be doing.
Study for a test properly.
The Kitchen Technique
I found I remembered more.
It makes me comfortable (having a snack).

(table continues)

Statements
My Study Chair
It gave me ideas on where and what I should have to study.
Studying Science
Well I used the study sheets and it helped me find more interest in it.
Studying Social Studies
I used my own study.
Goals and Rewards
If I didn't get a good mark my mom might get mad.
Studying Math
A easy way of studying.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

[a] One student did not provide an explanation.

[b] One student did not provide an explanation.

[c] Two students added spelling to the list of available responses.

[d] One student did not provide an explanation.

[e] One student did not provide an explanation.

Table 14

Statements by Students Responding to Part II, Question 4 of Study Strategies Follow-Up

Statements
Grade 5B[a]
Day Plan[b]
I could not follow it right.
Cause would like to play and study at the wrong time.
I never go by a day plan.
I had to do something else.
My Study Chair
It was not helpful because I had already had a studying place.
It got too comfortable.
It doesn't matter to me what chair I use.
It was too comfortable.
I can work on any kind of chair.
Studying Science[c]
Because I don't like science.
Because I never know the some of the questions, but I try.
Studying Social Studies[c]
I do not get how to study Social Studies right.
I don't know the answers most of the time and can't seem to find out.

(*table continues*)

Statements
Time-Lining
My schedule kept changing so what was the use.
It is less time.
I just don't like it.
Cheat Sheet
It was least helpful because it was a cheat sheet.
I do not cheat.
Because it doesn't stay in your mind.
Remembering
Because I have a very short memory.
I kept forgetting.
Goals and Rewards
I always buy things and read them.
It didn't have a meaning for me.
Studying Math
Because I didn't have to do much studying on math.
Grade 7B[a]
Day Plan
I never did what it said.
This wasn't helpful because something different might happen in the time you had planned something.
I couldn't follow a special plan or study a certain time limit.

(table continues)

Statements
I can't always follow it for varied reasons.
Because it is a waste of time.
The way my day turned out, I couldn't do anything on the sheet.
Because I just did the homework that I normally had then 15 minutes a night of studying.
Because when you plan something it may turn out that way.
The day plan is useless no one knows what's going to happen that day.
I didn't follow it.
If I have a day plan I find myself restricted and in which I find it harder to succeed in higher marks.
My Study Chair
I don't study enough to make the chair helpful.
Because I never used it.
It didn't matter how I sat when I studied.
The chair did not make a difference to me as long as I was sitting not lying down.
Because I have to be in a comfortable laying position to study.
Cheat Sheet
Because cheating doesn't get you anywhere, it just proves that you don't know the material.

(*table continues*)

Statements
It takes too long to do the test/exam.
I didn't think it was worth it. I mean if you don't know it half way through the exam you're not going to remember in the beginning.
Because I forget before I get a chance to write it down.
My Study Chair
A chair doesn't matter to me.
I can usually study for a test anywhere except where there is lots of noise.
I just studied where I always study, on a wooden chair.
Did not use it.
Studying Math
Because I did that anyway.
I tried to study this system and I flunked math.
I just have overall trouble.
Remembering
I can't remember anything.
It's hard to remember things.
Cheat Sheet
Because the teachers never give you the answers.
Because I didn't know what was on the test.
Goals and Rewards
I didn't like the idea. I thought the better marks were my rewards or goal.

(*table continues*)

Statements
Time-Lining
We didn't use it.
Studying Language Arts
Grammar sucks.
The Kitchen Technique
More distraction.
Remembering[c]
Because I forget it.
Time-Lining
Because I never used it.
Studying Math
My marks are the same and are still high.
The Kitchen Technique
Because how can you study when it's not quiet.
Other
I didn't use any actually. I don't study. Sorry.
Grade 8B[c]
Day Plan
Because I can't schedule what I do because I do different things at different times, at all times.
Because it is really hard to stick to.
Our family, as a whole, did different things each day making

(table continues)

Statements
it difficult to keep a constant day plan eg. Having supper at different times.
My days are different all the time.
It messes up your life too much.
Because you never follow it because you get unexpected visitors or something.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for clarity.

[a] One student did not respond.

[b] Three students did not provide an explanation.

[c] One student did not provide an explanation.

2. In Table 10 it can be observed that at least one student responded to this question ambiguously.

3. In Table 11 the majority of the students recommended the program to others because they found it helpful themselves.

4. Table 12 shows the six responses of the students who would not advocate the program to others. Four of the six students did not personally find the program helpful.

5. Table 13 more specifically reveals how students found particular lessons helpful. Table 7 indicates that the lesson on studying language arts was not cited as a most helpful lesson.

6. When Table 14 and Table 8 are compared it can be seen that no lesson was cited across all grade levels as being least helpful.

Closing Remarks

Though the statistical data showed that the strategies-for-studying model was of inconclusive value, the student self-reports indicated that the majority benefited from the program. In addition the program was almost unanimously endorsed as a course of studies for fellow students.

Results of the Follow-Up Investigation

Comparison of Results Before Treatment

Procedure and Results

The F test applied to the January Grade 5A and Grade 5B mean test scores revealed that the samples came populations with common variance. No students transferred in or out throughout the investigation.

Comparison of Results Before and After Treatment

Procedure and Results

The *t* test was applied to the January and March mean test scores to test the following null hypothesis: there is no significant difference between the mean test scores before and after treatment. The results are tabulated in Table 15. Raw data and calculations appear in Appendix F.

Conclusion

Examination of Table 15 led to the following decision:

1. The null hypothesis was accepted.

Interpretation

There was no significant difference in the mean test scores of the students in Grade 5A before and after treatment. The 0.05 critical value was applied.

Results of the Follow-Up Questionnaire

Procedure

A follow-up questionnaire was administered to Grade 5A approximately one month after treatment. Tables 16 and 17 document the results.

Conclusions

The self-reports of the students indicate the following:

1. An over-whelming majority said the program had a positive effect (see Table 16).

2. More than three fifths of the students reported that they spent more time studying after treatment (see Table 16).

Table 15

Summary of t Test Analysis for Follow-Up Investigation

Test	V	X	df	Critical Value	t	Null Hypothesis
January	30	58.90	29	0.05=2.002	1.629	Accepted
March	30	65.53	29			

Table 16

Summary of Student Self-Perceptions Following Treatment in Grade 5A

Variable	Percentage
(n=28)	
Effect on student	
Positive	93
None	7
Negative	0
Time spent studying	
More	61
Same	39
Less	0
Marks	
Better	89
Same	11
Poorer	0

Table 17

Summary of Student Responses to Part II, Questions 1 & 2 of Study Strategies Follow-Up

Variable	Response Yes	 No
Has the program changed the way you study?	93	7
Would you recommend this program to others?	96	4

Table 18

Grade 5A Responses to Part II, Question 3 of Study Strategies Follow-Up

Lesson	Percentage
My Study Chair	7
Remembering	21
Studying Science	0
Studying Social Studies	18
Goals and Rewards	39
Time-Lining	4
Studying Math	4
Day Plan	7
Cheat Sheet	0
Studying Language Arts	0
The Kitchen Techniques	0

Note. Students were allowed to select only one response.

Table 19

Grade 5A Responses to Part II, Question 4, of Study Strategies Follow-Up

Lesson	Percentage
My Study Chair	28
Remembering	11
Studying Science	4
Studying Social Studies	4
Goals and Rewards	7
Time-Lining	7
Studying Math	0
Day Plan	31
Cheat Sheet	4
Studying Language Arts	4
The Kitchen Technique	0

Note. Students were allowed to select only one response.

3. Almost nine tenths of the students felt that their marks had improved after treatment (see Table 16).

4. More than nine tenths stated that the program changed the way they studied (see Table 17).

5. More than nine tenths recommended this program to others (see Table 17).

6. "Goals and Rewards" and "Remembering" were reported to be the most helpful (see Table 18).

7. "Day Plan" and "My Study Chair" were perceived to be the least helpful lessons (see Table 19).

Observations

The results of the follow-up questionnaire for Grade 5A closely parallel the results found in the original experiment. Furthermore, the percentages favouring the program were larger.

Written responses. Tables 20 through 25 provide the written responses of the students to the second part of the follow-up questionnaire. When compared to the original investigation, these tables show a high degree of similarity.

Table 20

Statements by Students in Grade 5A Responding "Yes" to Part II, Question of Study Strategies Follow-Up

Statements
Because I now spend a lot more time studying.
I studied 10 minutes before and now I study 20 minutes and now my marks are in the 90's.
Because I never used to study but I do now (not regularly).
Now I know more ways of studying.
It changed by having more time studying.
I changed my way on studying by using the different methods.
I get better marks on tests and I study mostly every day.
I studied 15 minutes more.
It changed my way of study because it gave me better marks.
It made me study more.
It changed my way of studying because I study a little more.
Well it's changed it because now when I study I usually get good marks.
It changed the I did my studying.
I don't study in bed any more.
I study more and know what it does and I did better.
I study better.
It made me try a little harder.

(table continues)

Statements
Yes it did change the way I studied, how it improved my marks.
It helps me get better in tests.
It changed my way of studying more.
Because I get better marks on what I study.
By teaching me more ways to study.
I now study after my brother goes to bed. It is a lot quieter.
Because it encouraged me to study more now.
Yes, because I have been studying a lot harder and getting better marks.
It changed my way of studying because it made me study more.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

Table 21

Statements by Students in Grade 5A Responding "No" to Part II, Question 1 of Study Strategies Follow-Up

Statements
It didn't change my way of studying I still study the same.
It didn't change my way of studying because that it is how I have always studied.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

Table 22

Statements by Students in Grade 5A Responding "Yes" to Part II, Question 2 of Study Strategies Follow-Up

Statements
Because I would like to others increase their marks.
Because it could help others like it helped me.
Because it helped me a little.
Because it helps people with difficulties.
Because it will teach you why you study and how.
Yes because so they can get better marks too.
Yes because there would be happier and smarter kids.
Because I think it would encourage them to study.
I would recommend this to others because it helped my work and it might help others.
Because it might be helpful to other people.
Yes if they didn't study enough. No, if they do study enough.
Because it could help people who are behind.
Because it might help them with their marks in school.
Because it helps you study better.
Because it helps you to get better marks.
Because it might help them too.
Because I jumped high in my marks and it could make everyone better.

(*table continues*)

Statements
Because it may help other people could use.
I think it would help a lot of people.
Because it helped me.
So others will study.
Because I feel that it might help them out.
It affects some people very well and it is good.
You learn something.
Because they will learn some too.
They will get better on tests too.
Yes because it helped me and it may help others.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

Table 23

Statements by Students in Grade 5A Responding "No" to Part II, Question 2 of Study Strategies Follow-Up

Statements
Because they might think I was really dumb.

Table 23

Statements by Students in Grade 5A Responding to Part II, Question 3 of Study Strategies Follow-Up

Statements
Goals and Rewards
I set a goal and it makes me get the goal.
I was striving for something and it makes me want it.
You felt good when you accomplished.
I usually always made my goal when the teacher told me to put my aim on the test/exam.
I have been setting and breaking goals since.
Because when I studied I would get a good mark and a reward. When I reached my goal I felt good.
My goals was go higher and I did.
My studying.
It made my work easier.
Well if I wanted to watch my favorite show I did my homework.
It was helpful because I knew if I studied I would get a reward.
Remembering
The folded-paper technique.
On remembering to study.
Well it made it easy on the test.

(table continues)

Statements
Goals and rewards because then I wanted to study.
Remembering made this helpful.
My studying.
Studying Social Studies
I achieved 72% on my social studies test.
I had a test and I got 100% and from then on I was studying hard.
I don't get it.
I studied more than before.
It was made helpful by the techniques.
My Study Chair
The thing that made it helpful was I used to sit in a comfortable chair.
I used to fall asleep when I was studying.
Day Plan
It was helpful because I could just look at what I am going to do.
It set a time for me to study every day.
Time-Lining
It made it helpful so I study harder.
Studying Math
Studying math.

(table continues)

Statements

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

Table 25

Statements by Students in Grade 5A Responding to Part II, Question 4 of Study Strategies Follow-Up

Statements
Day Plan[a]
Because it did not do anything to help me.
This was the least bit helpful because my favourite shows were on at that time.
Whenever we go somewhere I do not know when to study.
It didn't help.
It made it the same for me.
My days are always changing.
Because I picked the best time for it.
I had to plan when I was going to study and I really wasn't quite sure.
My Study Chair
I study better with soft music.
Because I always sat in a good chair.
Because a study chair doesn't do a thing for my concentration.
I couldn't study sitting on a chair.
Because I find that I study better on other things.
I'm always told to do it on the floor.

(table continues)

Statements
My study chair was least helpful.
It takes very long for me to get to sleep in a chair.
Remembering
It was least helpful because I still don't remember.
I think remembering did not learn too much that way.
I can't remember.
Goals and Rewards
I can't get into the routine.
I didn't need it.
Time-Lining[a]
Because I thought I could study whenever I wanted to.
Studying Science[a]
Studying Social Studies
I don't like social studies very much.
Cheat Sheet
We didn't study it.
Studying Language Arts
My test was on Science and Social.

Note. Spelling was corrected; punctuation was not corrected except that a period was placed at the end of each statement for the purpose of clarity.

[a] One student did not provide an explanation.

Summary Remarks

This chapter dealt with statistical and student self-reported data of both the initial and the follow-up investigation. Although the statistical data was inconclusive, the self-reports of the students indicated not only that the program effected a beneficial change in their study activities but that they also advocated it for their fellow students. On the whole while many students agreed that the lessons on daily planning and study location were least helpful, many also agreed that the lessons on remembering, goals and rewards and the cheat sheet were most helpful.

CHAPTER FIVE

Conclusions, Limitations, Implications, Suggestions and Future Applications

Conclusions

On the basis of the statistical data and within the limitations of this investigation it can be concluded that:

1. Instruction in strategies for studying employing this model was of value at the Grade Seven Level.

2. Students at each grade level supported the instruction given in studying via this model.

On the basis of the self-reported data and within the limits of this investigation it can be concluded that:

1. Increasing the amount of time contributed to study may have had a positive effect on mean test scores. There is a suggested relationship between the self-reported increase of study time put in by Grade Seven and the significant difference in favor of treatment found when comparing the experimental group to the control group.

2. Some students indicated that spending more time studying after treatment resulted from being familiar with a larger repertoire of strategies for studying. Also, some students reported that they were now more interested in studying. Both statements suggest a feeling of positive control over learning.

3. There is inconclusive evidence that beginning study earlier in advance of a test made a difference but there is a suggested

relationship between studying less time ahead of a test an no difference in mean test scores at the Grade Eight Level.

4. Specific description of study activities improves with treatment.

5. Study help from family members did not seem to affect mean test scores.

6. There does not appear to be a relationship between the ability to describe study activity and a significant difference in test scores.

7. Students would not prefer to receive the lessons entitled "Day Plan" and "My Study Chair." The statements accompanying these decisions indicate these lessons to be impractical.

8. Students preferred the lessons entitled "Remembering," "Goals and Rewards" and "Cheat Sheet." The written statements indicate that the students were able to put the information in these lessons to practical use.

9. The majority of the students stated that they benefited from the instruction.

10. Almost all of the students advocated the Strategies for Studying Program to others.

Limitations

The counsellor presenting the Strategies for Studying Model felt that the intermittent nature of the lesson presentations placed limitations on the regular continuity of the program.

Taking time from the regular subjects to teach the strategies took away from the amount of instructional time the students would have received in the core subject regularly taught during that class period.

The transference from the study strategies instruction to the teaching of the core subject area was not possible due to the requirements set out in this research. Had the classroom teacher been able to reinforce the instruction in the strategies, the reinforcement of repetition and subject-teacher advocacy may have had a significant effect. In addition, the teacher felt negatively disposed to leaving the classroom during the instruction.

The instructor of the program also felt that he would not only feel more relaxed but that he would also personalize the lessons on future deliveries of this program.

The counsellor that presented the program wrote the following comments:

> I wish to first of all express my appreciation at being involved in the study. In the first place you were able to provide me with a tidy little package on study skills that I would have had to spend a great deal of time in developing. For the purposes of the study I tired to use the material just as you had prepared it and I believe in retrospect that this was a mistake. My lessons were on occasion stilted rather than free flowing.

In general I got a psitive response from the classes to the presentations. There is a qualification; I'm not certain as to how much of the response was due to getting a break from the regular routine. Furthermore, I would say there are a number of students who are not prepared to put any effort into study. Their major concern is just to get by.

Implications

In terms of educational goals and practices this investigation implies that:

1. Grade Seven may be an optimal time for teaching strategies for studying.

2. Students in Grade Five may be too young to benefit significantly from instruction in some of these strategies.

3. Students in Grade Eight may have already established patterns of study for junior high, and may be reluctant to try another approach.

4. The classroom teacher may have a necessary role in the instruction of relevant study strategies whether the teacher actually provides the strategies or whether the teacher is observing and participating in the lessons provided by the counsellor.

5. The similar pattern but higher percentages revealed in the follow-up investigation may have resulted from the instructor being more experienced at teaching the strategies. This suggests that familiarity with the program may have a positive effect on

instruction.

6. Students in this age group may lack control over much of their non-school time and their choice of study habitat in the home. It may also be that day-planning has an underlying freedom-versus-self-discipline factor that students of this age have not yet found necessary to control in their lives.

7. The nature of the teacher-made tests given should be investigated with respect to type of test and individual student performances.

Suggestions

The counsellor who presented the program wrote:

> If I were to do this again, which I intend to do, I will concentrate on one grade level for an intensive unit at the beginning of the year. I will then follow through with periodic reminders during the course of the year. I will attempt to enforce as much as possible a change in routine so that new habits are formed. I believe more contact with the parents would be helpful in establishing a greater commitment to the concept of study.
>
> I say this because I noticed several students who appeared eager to improve but unable to commit themselves to change.

In addition, the writer makes the following suggestions:

1. The classroom teacher should be present during instruction or should be the teacher of the program.

2. The program should be personalized to the style of the

instructor.

3. Supplementary aids such as available films and video tapes might be incorporated into the teaching plan to reinforce the model.

4. The strategies model might be taught to parents who are interested in helping their children improve work study habits.

5. In-service should be provided to teachers to assist them in teaching a study strategies program in the classroom.

6. Information seminars should be provided for interested parents.

Future Applications

Future applications of this investigation could include the following:

1. Conduct similar research at Grade Ten, Grade Eleven, and Grade Twelve.

2. Conduct similar research with first-year college and university students.

3. Devise a computer-assisted version through which students would be able to work independently.

4. Expand on the lessons available so that teachers have a selection of lessons from which to choose.

5. Conduct a similar investigation that requires subject teachers to remain present in the classroom.

6. Conduct further research that examines the nature of the test and the influence it has on performance.

Concluding Remarks

The instructional model of strategies for studying or self-learning proposed herein is strongly advocated by the counsellor who instructed the program in this investigation and the students who participated. It is anticipated that teachers who begin with this model will start out rigidly and then gradually integrate their own style and expertise into the study-strategies teaching plan. It is further anticipated that teachers who adopt a study strategies plan to assist students will no longer teach these strategies on a formal basis as a separate instructional unit but will incorporate certain basic relevant strategies into their overall teaching plan.

Bibliography

Aebli, H. (1970). Piaget and beyond. _Interchange_, _1_, 12-23.

Apps, J. W. (1982). _Study skills for adults returning to school_ (2nd ed.). New York: McGraw Hill.

Bandura, A. (1969). _Principles of behavior modification_. New York: Holt, Rinehart & Winston.

Bandura, A. (1977). _Social learning theory_. Englewood Cliffs, NJ: Prentice-Hall.

Beck, J. (1967). _How to raise a brighter child._ New York: Pocket Books.

Brown, G. E. (1973). _How to improve your grades and live happily ever after: A brief guide to academic survival_. Roslyn Heights, NY: Libra Publishers.

Crawford, M. (1978). _Teaching study skills_. Dansville, NY: The Instructor Publications.

Devine, T. G. (1981). _Teaching study skills_. Boston: Allyn & Bacon.

Donahoe, J. W., & Wessells, M. G. (1980). _Learning, language, and memory_. New York: Harper & Row, ch. 9, pp. 358-406.

Flavell, J. H. (1976). _Metacognitive aspects of Problem Solving._ In L. B. Resnick (Ed.), _The Nature of Intelligence_. Hillsdale, NJ: Lawrence Erlbaum Associates.

Grassick, P. (1983). _Making the grade: What you need to know about how to prepare for and write tests_. Toronto: Macmillan of Canada.

Hamblin, D. H. (1981). Teaching study skills. Oxford: Basil Blackwell.

Hayakawa, S. I. (1941). Language in action. New York: Harcourt, Brace & Co.

Hodges, P. (1979). Improving reading/study skills. Dubuque, IA: Kendall/Hunt.

Hughes, J. P. (1968). Linguistics and language teaching. New York: Random House.

Hunter, M. (1979). Retention theory for teachers. El Segundo, CA: TIP Publications.

Locke, E. A. (1975). A guide to effective study. New York: Springer.

MacDougall, B. C., & Herman, A. (1977-78). A counsellor-developed study skills program. The Alberta Counsellor, 7(1), 50-52.

Meichenbaum, D. (1978). Cognitive-behavior modification: An integrated approach. New York: Plenaum Press.

Mikulas, W. L. (1972). Behavior modification: An overview. New York: Harper & Row.

Morgan, C. T., & Deese, J. (1957). How to study. New York: McGraw-Hill.

Morris, J. (1973). Learning to Learn. Toronto: The Governing Council of the University of Toronto.

National Education Association of the United States. (1975). Homework. Washington, DC: Author.

Orchard, N. E. (1953). Study successfully. New York: Whittlesey House.

Robinson, A. H. (1978). Teaching reading and study strategies: The content areas. Boston: Allyn & Bacon.

Robinson, J. P. (1970). Effective study. New York: Harper & Brothers.

Scheflen, A. E. (1973). How behavior means. New York: Gordon & Breach.

Skinner, B. F. (1969). Contingencies of reinforcement: A theoretical analysis. New York: Appleton-Century-Crofts.

Skinner, B. F. (1974). About behaviorism. New York: Alfred A. Knopf.

Spitzer, H. F. (1939). Studies in retention. Journal of Educational Psychology, 30, 641-656.

Strang, R. (1955). Guided study and homework. Washington, DC: National Education Association.

Torgenson, J. K. (1982). The learning disabled child as an inactive learner: Educational implications. Topics in Learning and Learning Disabilities, 2(1), 45-52. (From Psychological Abstracts, 1982, 68, Abstract No. 2175).

Vanier Institute of the Family. (1976). Learning and the family: A conceptual framework on learning (Task Force on Learning Report). Ottawa: Author.

Walter, T., & Siebert A. (1976). Student success: How to be a better student and still have time for your friends. New York: Holt, Rinehart & Winston.

APPENDIX A

STRATEGIES FOR STUDYING
OR
HOW TO BE YOUR OWN BEST STUDY MANAGER

by

Donna P. Larson

Notes to Instructor

1. Students should have the following supplies in class daily.
    - 1.1 duotangs or section in binder
    - 1.2 loose leaf paper
    - 1.3 pen, pencil, eraser, red pen

2. The lessons do not build in day-to-day review. It is assumed any new vocabulary introduced will be automatically raised in subsequent lessons of this program. As well, it is assumed that the usual checks for adequate completion of assigned tasks will be instructor-initiated.

3. Attending Behavior is something on which I always insist. This consists of the following:
    - 3.1 Feet flat on the floor (may need alternate size desk)
    - 3.2 Books closed (lessen distractions)
    - 3.3 Pens and pencils down (no toys for doodling)
    - 3.4 Hands on top of the desk (no fidgeting)
    - 3.5 Sitting up straight and tall (allows more oxygen to the brain)
    - 3.6 Eyes on the teacher (I may think you are listening, too)

    It would be helpful to insist that this behavior occur during the content portion of each and every lesson. It is part of the strategy.

4. I find that it helps me to make students accountable for the content of the lesson of the day if I can allow time (5 to 10 minutes) at the end of each lesson for students to keep a record in their notebooks called, "What I learned today". This has not been built into the program but may be employed as teaching style and time permit.

Lesson Title: Introduction

Expected Outcome: Establish self-reported base-line of study methods presently employed by students.

Activity: Have the students describe their present methods of study according to the handout for this lesson.

Also for the purposes of later self-evaluation, students are asked to record their present achievement level in the four core subjects of Language Arts, Science, Mathematics and Social Studies

Method: It is preferred that present study methods not be discussed. This information is merely for the record and is to be handed into the teacher at the end of the class time allotted for the completion of the inventory.

Note:

Some students may not remember the mark they scored on the last test in the various subjects. It would be helpful, therefore, to have this information available for them. Knowing their marks will help them in a later goal-setting lesson.

Note:

The student inventory will be photocopied and returned.

Name:________________________

Date:________________________

STUDENT INVENTORY

1. Describe what you do when you study.

____

____

____

2. State when you study if the teacher assigns a test for next Tuesday on the last chapter in Science. (e.g. 2 days ahead, night before)

____

____

____

3. State the average amount of time you spend studying for a test. (If time varies for each subject, be specific.)

____

____

____

4. Do members of your family help you with studying? If your answer is yes, please explain how they help you.

____

____

____

5. My last mark on a test in Science was __________.
6. My last mark on a test in Social Studies was __________.
7. My last mark on a test in Mathematics was __________.
8. My last mark on a test in Language Arts was __________.

Lesson Title: Strengthening the Cue

Expected Outcome: To get students to select a study area at home where they can practise desirable study behavior.

Content: For many of you the chain of events you are about to hear described is all too familiar.

Ask the students . . .

1. "What does dad do almost every evening after he leaves the dinner table?"
   (The response is likely to be that he moves into the living room to sit in his favorite chair. He then either watches television or picks up the evening newspaper. Within a short time he is asleep).

2. What has dad come to associate with this chair?
   sleeping

3. Since the time you were born your parents have been trying to get you to associate your bed with sleeping. Do not study on your bed. Your bed is associated with sleeping.

   A friend of mine who is a teacher slept so much in class that she feels sleepy and finds it hard to resist the urge to sleep whenever she sits in a student's desk.

   One day when we were talking about this lesson she told me that she does her homework in the same chair in which she sits to eat her meals. She cannot sit in that chair for more than a minute without getting up to find something to eat.

4. We are creatures of habit by nature and so what I am asking you to do is to start forming some new habits ------ habits that will last your student life-time ------. Remember - it takes three weeks to form a habit.

Ask the students:

Do you have a particular chair in which you sit to eat your meals? to watch television? to read comics?
Discuss briefly.

Now think of a chair in your home that you could use only for studying. This might be the same chair in which you do your homework but preferably this chair will be "Your Study Chair," and only your study chair.

Take out your "Strategies for Studying" notebook. Tell me about the chair you have chosen and why this chair is good for studying.

Homework: Tell your mother and father tonight about the chair you have chosen - For Study Only!

Note:

It probably goes without saying that this chair is not too soft and not too hard (hard is better).

It probably goes without saying that this chair is in an adequately illuminated area and that the light source does not create shadows.

It probably goes without saying that this area is at least reasonably free of distraction (noise, television, other family members, etc.).

And it probably goes without saying that this area is stocked with the necessary supply of pens, pencils, colored pencils or markers, erasers, rulers, paper, etc. - the general run-of-the-mill study advice usually dictated early in many programs that teach studying.

Lesson Title: Goals and Rewards

Expected Outcomes:

1. Students will be able to cite specific goals with respect to achievement and work study and will be able to state rewards for each,
2. Students will be able to classify their goals into categories of short term or long term.
3. Students will be able to classify the type of reward they have chosen for their goals.

Content:

If you are playing hockey, the goal is to score the most goals and win the game. If you are playing in a volleyball tournament, the goal is to win the most games in order to win the tournament.

If you win, there is always a reward. The reward might be in the way of a round of milkshakes purchased by the coach "just 'cause he is so proud of you" or the reward might be the satisfaction you feel because you played your best and helped the team win by scoring three points.

Rewards? Rewards are very important. Sometimes rewards come from others; sometimes they have to come from ourselves.

A reward is something you get for achieving a goal.

Let's take a look at the following examples of goals and rewards, self-rewards with respect to studying.

Note:

Provide students with handout or use overhead.

Being recognized is very important to each and everyone of us. Sometimes our parents do not recognize all the things we are doing to get on the road to success. It is up to us to teach them how. But be careful. A balance of self-rewards and negotiated external rewards is best. A good balance would be to have two or three or even four self-rewards for every negotiated external reward. Now it is your turn to build some self-rewards and some negotiated external rewards into your life.

Note:

Ideally class time will be available to allow for discussion after the students have written down one or two goals together with the respective reward and its classification.

It is important that goals be realistic. This means that we have to choose a goal that we know we can reach. We wouldn't want to gip ourselves out of a reward.

On the other hand if we set our goals too low, we may be fooling ourselves into thinking we are doing something special when we really are not.

People that set goals know what they want out of life. They are very often the ones who are the most successful.

Wayne Gretzky is a very successful hockey player. Do you think he has a goal? What do you suppose it is? Would this be a long term goal (something he would achieve a year from now) or a short term goal (something he would achieve in the next game)?

Note:

Undoubtedly the class will raise some goals of each type in the ensuing discussion.

Activity: Go back to handout #1 for this lesson and in the space provided beside each word "Goal" state whether your goal is short term or long term.

Note:

Students should have practise recording one or two of each type.

Homework: Encourage the students to take home their "Goals & Rewards" sheet to share with their parents.

This can be done by asking the parents to sign the sheet as they did in an earlier lesson.

Handout #1 **Goals and Rewards**

	Goal	Reward	Type of Reward
1.	When I can write out three definitions from memory	I will take a ten minute break	Self-reward
	Goal		
2.	When I finish my math homework	I will read my new comic book	Self-reward
	Goal		
3.	When I score a hundred percent on a spelling test	I will buy the new record for which I've been saving	Self-reward
	Goal		
4.	When I improve my science mark by 10%	I will ask dad to take me hunting	Negotiated Self-reward
	Goal		
5.	When I have passed four tests	I will ask mom to let me have a sleep over party	Negotiated Self-reward

Handout #2 Goals and Rewards

	Goal ________	**Reward**	**Type of Reward**
1.	When I ________	I will ________	________
	________	________	________
	________	________	________
	________	________	________
	Goal ________		
2.	When I ________	I will ________	________
	________	________	________
	________	________	________
	________	________	________
	Goal ________		
3.	When I ________	I will ________	________
	________	________	________
	________	________	________
	________	________	________

Lesson Title: Day Plan

Expected Outcomes:

1. Students will better be able to gage the amount of time they have available for study as opposed to the amount of time available for homework as opposed to the amount of time required for other activities of the day.
   In short, they will be more aware of how their time is spent and to what extent.

Activity:

1. Hand out the attached daily planning sheet for the coming week.

2. Have students fill in "constants" such as the following:

   2.1 supper time

   2.2 bus ride home

   2.3 chores

   2.4 favourite TV show I just never miss

   2.5 hockey practise

   2.6 music lessons

   2.7 "play time"

3. Have students choose as regular a homework time each day Monday to Friday, or Sunday to Thursday, as is physically possible.

   3.1 Students should be given the following points to consider in selecting their homework time:

      3.1.1 The time when I remember best the instructions the teacher provided for the given assignment.

      3.1.2 The time that is the most likely to develop as a daily habit.

4. In addition have the students record at

least one 15-minute time slot daily for the purposes of studying.

5. Distribute two more copies of the Daily Planning Sheet to each student. Ask the students to make two more copies of their plans. Now they will have --

   5.1 one for their locker doors

   5.2 one for their parents to sign and return to class next day

   5.3 one for their study area at home...

... and they will have copied it enough times that the chances of remembering it are greater.

Content: One of my rules is that I (almost) never study or do homework past nine o'clock at night. That's part of my reward system... my reward to myself for having done a day's worth of work.

One of my rules is that I do not take any phone calls during my working time. Talking on the phone is a "play time" activity. Who is in control? If I am the one in control, I can call back. To help make this suggestion work for you, inform your friends of the time that you do your homework and that you will not allow yourself to be interrupted. It is not unfriendly; it is just being assertive.

Probably the most important thing to remember is that I need the support and encouragement of my family to do my job and right now my job is to be the best student I can be. If my parents agree to help me follow the schedule I've just written, then they won't be interrupting me during my working time. Right? Right!

Homework: Don't forget. Bring your Day Plan back to me tomorrow with your parent's signature indicating that you have not only discussed this plan with them but that they understand you need this time in order to do the best job you can.

DAILY PLANNING SHEET Week of ________

Name ________

	SUN	MON	TUES	WED	THURS	FRI	SAT
3:34							
4:00							
4:15							
4:30							
4:45							
5:00							
5:15							
5:30							
5:45							
6:00							
6:15							
6:30							
6:45							
7:00							
7:15							
7:30							
7:45							
8:00							
8:15							
8:30							
8:45							
9:00							

THE END

Lesson Title: Seven plus or minus Two, Part 1

Expected Outcome: Students will be made aware of the pitfalls of short term memory, and will be shown some strategies that can be employed to overcome them.

Activity:

1. Call for attending behavior.
2. Distribute one sheet of lined paper to each student.
3. Have each person in the class select a new name for himself or herself, and to keep it to themselves until asked to reveal it. (e.g. E.T., Count Dracula, Einstein, Peal, Sam, Junior, Aggie.)
4. Without calling anyone by name have the students one-by-one row-by-row reveal their new identity.
5. Ask the students to record as many of the new names as they can remember.
6. Now ask the students to record the name of the person who chose that identity beside it.

Class Discussion Questions:

1. How many did you remember? (5-9 correct is average)
2. What helped you remember that Albert was Dwight, for instance? Perhaps he wore white.

This type of remembering is done by association - associating something we want to remember with something we already know.

I used to travel to Saskatchewan a lot but I could never remember which came first when I left Edmonton: Vermillion or Vegreville. I found that if I used the alphabet, Veg came before Ver and now I can remember that Vegreville is first.

It works the same for me in remembering that Entwistle is closer to Edmonton that Evansburg. But I only use the alphabet to help me remember things when I have the pattern fixed so I can never get it mixed up in my head.

It doesn't help me when I have to remember that the red light on a police car is on the left instead of the right.

This way of remembering is called mnemonic coding. Can you think of some other mnemonic codes or tricks you use to help you remember?

Briefly, some others are:

My	Mercury
Very	Venus
Extravagant	Earth
Mother	Mars
Just	Jupiter
Sent	Saturn
Us	Uranus
Nine	Neptune
Parachutes	Pluto

latitude

The imaginary lines that run east and west around the earth.

Notice the crossing of the T's.

Ask the students to suggest ways in which they could use mnemonic coding to help them remember things.

Lesson Title: Seven plus or minus Two, Part 2

Preparation: The teacher will have collected 20 objects ahead of time and have them covered. Objects should be placed in an area such that every member of the class will be able to observe them.

Activity:

1. Distribute one sheet of lined paper to each student.

2. After students have gathered around your "collection," uncover the 20 objects and allow the students to observe them for one minute. Then re-cover them.

3. Students will have been instructed ahead of time that once the objects are covered they are to quietly return to their seats to record the names of as many objects as they can remember. (Spelling doesn't count.) Allow a maximum of three minutes for recording.

4. Ask the students to check their own work as you state the name of each object pulling it from the collection.

Class Discussion Questions:

1. How did you do?
   Quickly survey by a show of hands how many
   scored 20/20?
   18 or more?
   15 or more?
   12 or more?
   (No need to embarrass the rest.)

2. What helped you remember the names of the objects? (The responses here will vary.) If any students grouped items into categories, they are practising "classification" and these students are already employing a good strategy for helping them to remember things.

3. How many remembered more names than they did objects? (Show of hands.) These students may possibly be better auditory learners.

4. How many remembered more objects than they

did names? (Show of hands.) These students may well be better visual learners.

Content:

Eighty per cent of the population is considered to be better visually than auditorally. That is, people are generally better at learning with their eyes. That is why the majority of the strategies you will learn will involve learning with your eyes more than they will involve learning with your ears.

Show "Henry" Cartoon to the class. Ask them what "Henry" could have done to help himself remember.

Hint:

Cramming!!! What does the Rule of 7±2 tell you about cramming?

The answer here lies in the difference between short term memory and long term memory.

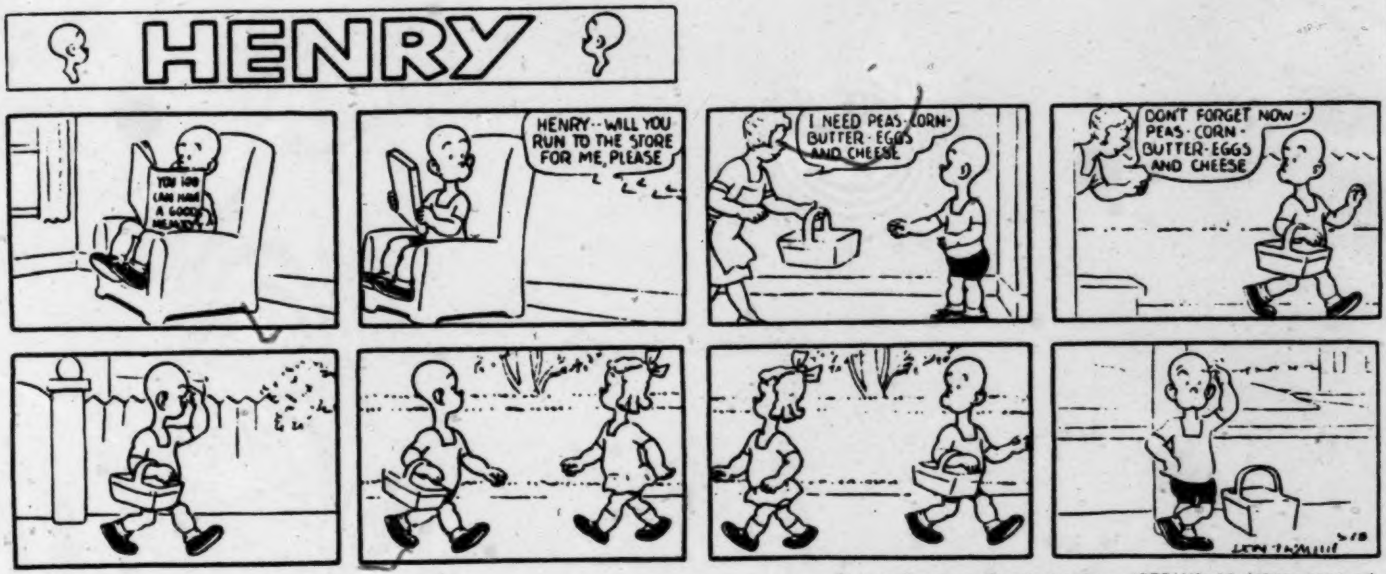
Class Discussion Questions:

1. What is your birthdate?
2. What is your phone number?
3. What was your phone number five years ago?
4. What makes you remember these?
5. What was your Grade One Teacher's name?
6. What were you studying about in science one year ago today?
7. Name two news items that were on the radio last Sunday morning? Why do you *not* remember these?

Content:

The theory is that if we go over and over and over something enough times just like your telephone number and the spelling of your name it stays in your *active* long term memory file. What does this tell you about remembering what you learned in school yesterday? Or what you learned in school last week in health class?

If learning happened by osmosis we could all sleep with books under our pillows so that the words would seep upward into our heads by morning without any effort on our part whatsoever.


HENRY
YOU TOO CAN HAVE A GOOD MEMORY
HENRY--WILL YOU RUN TO THE STORE FOR ME, PLEASE
I NEED PEAS-CORN-BUTTER-EGGS AND CHEESE
DON'T FORGET NOW-PEAS-CORN-BUTTER-EGGS AND CHEESE

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Lesson Title: How to Study Science

Expected Outcome: Students will have a system of strategies that they can use to study science.

Note: Students will have brought their science texts and notebooks to class.

Activity:

1. Hand out a sheet of lined paper to each student.
2. Have the students fold this paper in half lengthwise.
3. Ask the students to contribute three new words from the chapter they are presently studying in science. Write these words on the blackboard.
4. Now ask the students to copy these three words onto the left hand half of the folded paper leaving about six (6) lines between each word.
5. Tell the students that they must be able to read and spell each word.

   5.1 The students will now practise reading through the words once with you as in choral reading.

   5.2 The students can now practise spelling the words by remembering the words. Have them turn their paper over and practise writing them on the reverse side of the paper (not the right hand half). After they have written all three words, have them check back to see if they are right. If they are not right, they should practise until each word is learned.

Note: It may be necessary to supply another piece of paper for this exercise.

Note: In practising spelling a sheet of looseleaf folded in half and folded in half again provides eight (8) sides on which to practise spelling.

6. Have them open the paper to reveal the whole page and now on the right hand half opposite each word ask them to record a definition for each of the words. This definition may be copied straight from the text or may be in the student's own words.

7. Now have the students re-read each definition.

8. As they are doing this pass out another sheet of lined paper to each student.

9. Have them place this piece of paper over the half of the page with the definitions written on it.

10. Ask the students to practise writing each definition from memory and to check back with the original definition each time to see if they are right.

    Say "If you are right, give yourself a check mark and move onto the next definition."

11. At the end of ten minutes ask the students to work with a partner. One person from the partnership is A and the other person is B.

    11.1 Have A ask B to spell the words. B checks his own work.

    11.2 Have A ask B to recite out loud (but not too loudly) the definitions from memory.

    11.3 Have B ask A to spell the words. A checks his own work.

    11.4 Have B ask A to recite the definitions aloud.

Note: Five (5) minutes is probably ample for this exercise.

12. Ask the students "How will you use this technique to help you with your studying?"

- Students should now have a process whereby they can actively study independently or engage another member of the family in their study process.

- The key here is active versus passive investment in the content of the subject matter as well as written rehearsal for the examination.

Activity: Ask the for two student volunteers. Give them each a copy of a script and ask them to perform the play in front of the class NOW (without rehearsal).

Note: Take a minute to entertain their laments and then go onto the following set of questions.

You wouldn't think of putting on a play without rehearsing it first, would you? Then you should not think of taking an exam without rehearsing for it.

Would you rehearse for a play by watching the other actors? Would you rehearse for a play by simply reading the script?

What would you do?

Help the students draw the analogies between rehearsing for a play and rehearsing for exam questions like matching, defining and filling in the blank.

There are still two types of exam questions with which we have not yet dealt: diagrams and the longer explanation-type questions.

Let's deal with diagrams first.

How should we study diagrams? By rehearsing. Either ask the teacher for extra copies of the diagram(s) or trace the diagram and practise labelling it from memory.

How should you study for the explanation-type questions? By rehearsing? Well, to be more specific -- by "psyching out the teacher" and then by rehearsing those questions.

Is the teacher going to ask you every question that you had to answer at the end of every sub section of this chapter?

Which questions will the teacher ask? Figuring out the answer to this question is called psyching out the teacher.

Answers will reveal some clues but the key here is to have put a big red star beside any question where the teacher has said "This is important" or where the teacher has indicated emphasis in any other way:

- repetition or going over and over and over a topic until you ask for an oxygen mask because you can't stand the air anymore.
- "There will be short quiz on this tomorrow."
- The teacher pounded the blackboard putting a hole through the wall (almost) saying, "This is important!"

Sometimes common sense tells you what question in this section is most likely to be asked.

Remember. It is "hoyle" to ask the teacher what he or she is most likely to ask -- though the teacher may not always tell you.

Note: The instructor should record the responses of the students on the blackboard. After four or five responses have been collected ask the students to record these in their science notebooks under the heading "Psyching out the Teacher"

Activity:

1. Hand out a piece of lined paper to each student.
2. Have the students take one of the "psyched" questions and copy it onto the paper.
3. Have them "rehearse" the answer they would write on the exam. They may use their texts and/or notes to help them through this first

time. This is not a memory exercise. This is a "modelling-excellence" exercise at this point.

Note: Students may wish to check their answers with their science teacher to see if they would have been awarded full marks for the answer.

4. When students feel that they have a model of excellence, they may begin practising the answer from memory just as they did for the "new words and meanings" exercise.

Summary:

If we take a look at the overall construction of a test we see that if you know the new language of the subject, that is, the new vocabulary, we should be able to pass the test.

Note: Instructor should put this diagram on the blackboard.

New Words	Meanings	Diagrams	Explanations
Matching Fill in the Blank Define Multiple Choice			
50-75%		25-50%	

What does this imply in terms of where you are going to spend you time studying for science?

Lesson Title: Time Lining

Expected Outcome: Students will be able to budget their time that is available for studying.

Content: Let us say that the teacher has assigned a test in Science for next Wednesday, and that today is Thursday. When are you going to start studying?

Here is one plan.

Wednesday - write out new words and meanings

Thursday - learn how to spell the words

Friday - review the spelling
- practise at least five of the meanings by writing them out until you know them perfectly

Saturday - practise 5 more meanings or the rest, whichever applies

Sunday - practise the diagrams

Monday - practise the explanations

Tuesday - review (but no later than 9 p.m.)

Note: I usually use a plan that allows me to not study the night before an exam. I use that evening to relax.

Activity: Time Line for a Test

Note: If a test has been assigned to the class, use it as an example. If not, do an imaginary one. The students should record the time line using a calendar style.

e.g.

Monday	Tuesday	Wednesday	Thursday

Lesson Title: How to Study Social Studies

The lesson approach here is identical to the Science lesson except that the word diagram is substituted for the word "map."

Note: Students will need you to actually work the material through with them right from "new words and meanings" to maps and explanations. They will not necessarily make the transference on their own. If need be, use this lesson to help students learn what certain test directions are asking; e.g. Explain, Describe, Compare, etc. Give them a model in note-taking form if necessary.

Lesson Title: How to Study Language Arts

Note: Language Arts is broken down into a variety of separate subjects:

1. Spelling: use "eight-sided folded-paper" strategy
2. Vocabulary: use "new-words-and-meanings" folded-paper approach
3. Literature: use "psyching out the teacher" approach
4. Grammar: rehearsal of doing questions correctly. Have the students copy questions from their notebook on a piece of lined paper and redo previous questions that have been checked as being correct.

   Then have them check back to see if they are right. (These models can be utilized in a later lesson on the "cheat sheet."
5. Creative Writing: suggest that students ask for a copy of an "A" paper. Discuss reasons why the teacher marked this paper with an "A".

Note: Students will have to work through each part with you. They will only transfer what you help them transfer from previous lessons.

Lesson Title: How to Study Mathematics

Content: Note: Mathematics is broken into four parts

1. computation
2. problem solving
3. new vocabulary
4. understanding what the question is asking you to do

1. Computation - learn by re-doing Rehearse by copying a question or two or three or ten onto your paper from your notebook. Mark your place and close the book. Do the questions. Open the book. Check to see if you are right. What will you do if you get some wrong?

2. Problem Solving - same as computation

3. New Vocabulary - teachers very seldom include the vocabulary type questions on math tests that they put on science tests. It is wise to check this point with the math teacher ahead of time to know exactly how you will study. But they do use this vocabulary in the questions.

4. Understanding what the question is asking you to do. Rehearsal is the key once again. This time work from the text, not your notebook to do some questions. Then check with your notebook to see if you are right.

Note: Rehearse each of sections 1, 2, and 4 with the students employing their present chapter of study in math.

Lesson Title: The Cheat Sheet

Expected Outcome: Students will be able to employ a strategy to overcome one short-term memory problem in test writing.

Content: Have you ever started writing a test but your mind went blank and then you couldn't remember a thing? Have you ever known everything the night before and then forgotten it when you awoke?

Think back to the lesson on 7 ± 2. Does this help you understand why these valuable pieces of information leave you?

One strategy to follow is to ignore the people around you before a test so that you have a better chance of remembering the 7 ± 2 things you want to remember.

Another strategy is to use the "Cheat Sheet" method. To do this do the following:

1. Keep the test paper turned upside down.
2. On the back of the test write down the 7 ± 2 things you have been saving to write down.
3. These now become your test notes to which to refer if there is a question about them on the exam.
4. This activity should never take more than 5 minutes.

Now close your eyes. Imagine the teacher marking your test. See the red check marks. Oh my. The first page is all right. Wow!

Open your eyes. If you believe that this could happen, you can make it happen. Good Luck on your next exam!

Lesson Title: **The Kitchen Technique**

After studying for 10 or 15 minutes in your favorite study chair you may need a drink of water or a cookie to nourish your brain. Try talking out loud to yourself telling yourself all the things you "studied" in the last few minutes on your way to and from the kitchen. When you get back to your chair, practise writing down everything you remember.

The Final Word

1. Have students submit their goal mark for the next test in each of the four core subjects of Mathematics, Science, Social Studies and Language Arts.
2. After the testing, have them complete and hand in Page 1 of the Student Inventory from the Introductory Lesson again.

Appendix B

Raw Data for Summary of Comparison of Student Inventory Before and After Treatment

Student Inventory

1. Describe what you do when you study.

Written description	Grade 5B n=23	Grade 7B n=17	Grade 8B n=11
more specific	16	5	4
no change	7	10	6
less specific	0	2	1

2. State when you study if the teacher assigns a test for next Tuesday on the last chapter in Science (e.g. 2 days ahead, night before).

Time ahead	Grade 5B	Grade 7B	Grade 8B
more	13	3	4
no change	8	13	4
less	2	1	3

3. State the average amount of time you spend studying for a test. (If time varies for each subject, be specific.)

Amount of time	Grade 5B	Grade 7B	Grade 8B
more	12	11	4
no change	5	4	4
less	6	2	3

4. Do members of your family help you with studying?

	Grade 5B	Grade 7B	Grade 8B
Before treatment			
yes	8	13	8
no	5	4	3
After treatment			
yes	21	14	9
no	2	3	2

Appendix C-1

Calculations for F Test of Homogeneity for Grade 5

Grade 5A January

X_1	X_1^2
65	4225
45	2025
79	6241
76	5776
71	5041
63	3969
52	2704
51	2601
41	1681
59	3481
72	5184
49	2401
39	1521
45	2025
72	5184
81	6561
78	6084
70	4900
54	2916
58	3364
40	1600
69	4761
42	1764
71	5041
45	2025
64	4096
68	4624
53	2809
70	4900
25	625

$N_1 = 30$

$\Sigma X_1 = 1767$

$(\Sigma X_1)^2 = 3122289$

$\Sigma X_1^2 = 110129$

$\overline{X}_1 = 58.9$

Standard Deviation

$$\theta_1 = \sqrt{\frac{\Sigma X_1^{\,2} - \frac{(\Sigma X_1)^2}{N_1}}{N_1}}$$

$$= \sqrt{\frac{110129 - \frac{3122289}{30}}{30}}$$

$$= \sqrt{201.75666}$$

$$= 14.204$$

Grade 5B January

X_1	X_1^2
68	4624
38	1444
76	5776
45	2025
75	5625
69	4761
81	6561
67	4489
74	5476
75	5625
65	4225
68	4624
41	1681
49	2401
44	1936
70	4900
72	5184
46	2116
67	4489
68	4624
44	1936
69	4761
75	5625
65	4225
34	1156
56	3136
91	8281

$N_2 = 27$

$\Sigma X_2^2 = 1692$

$(\Sigma X_2)^2 = 2862864$

$\Sigma X_2^2 = 111706$

$\overline{X}_2 = 62.667$

Standard Deviation

$$\theta_2 = \sqrt{\frac{111706 - \frac{2862864}{27}}{27}}$$

$$= \sqrt{210.14814}$$

$$= \quad 14.496$$

F Test Grade 5 January

$$F = \frac{\theta_2}{\theta_1} = \frac{14.496}{14.204} = 1.02$$

With 27-1 df for the numerator and 30-1 df for the denominator an F value of 1.64 is needed to show a significant difference. Therefore, the samples came from populations with common variances and t test calculations can proceed.

?

Appendix C-2

Calculation of F Test of Homogeneity for Grade 7

Grade 7A January

X_1	X_1^2
82	6724
67	7056
72	5184
69	4761
68	4624
45	2025
73	5329
21	441
55	3025
86	7396
50	2500
68	4624
55	3025
65	4225
60	3600
90	8100
41	1681
67	4489
40	1600
52	2704
83	6889
49	2401
38	1444
92	8464
75	5625
65	4225
85	7225
40	1600
73	5329
47	2209
78	6084
45	2025
58	3364
68	4624
68	4624
53	2809
38	1444
52	2704
68	4624
68	4624

Grade 7A January

X_1	X_1^2
56	3136
50	2500
52	2704
87	7569
78	6084
63	3969
45	2025
60	3600
75	5625
73	5329
63	3969
70	4900
62	3844
75	5625
50	2500
42	1764

N = 56

$\Sigma X_1 = 3470$

$(\Sigma X_1)^2 = 12040900$

$\Sigma X_1^2 = 230593$

$\overline{X}_1 = 61.964$

Standard Deviation

$$\Theta_1 = \sqrt{\frac{230593 - \frac{12040900}{56}}{56}}$$

$$= \sqrt{278.15946}$$

$$= 16.678$$

Grade 7B January

x_2	x_2^2
87	7569
74	5476
40	1600
57	3249
55	3025
45	2025
45	2025
40	1600
55	3025
90	8100
67	4489
35	1225
85	7225
44	1936
90	8100
87	7569
74	5476
50	2500
81	6561
49	2401
81	6561
85	7225
75	5625
50	2500
84	7056
58	3364
63	3969
67	4489
45	2025
100	10000
76	5776
58	3364
62	3844
90	8100
84	7056
86	7396
40	1600
62	3844
78	6084
58	3364
44	1936
60	3600
70	4900
98	9604

Grade 7B January

X_2	X_2^2
72	5184
76	5776
90	8100
70	4900
80	6400
86	7396
92	8464
48	2304
92	8464
70	4900
70	4900
86	7396

$N_2 = 56$

$\Sigma X_2 = 3856$

$(\Sigma X_2)^2 = 14868736$

$\Sigma X_2^2 = 282642$

$\overline{X}_2 = 68.857$

Standard Deviation

$$\theta_2 = \sqrt{\frac{282642 - \frac{14868736}{56}}{56}}$$

$$= \sqrt{305.8725}$$

$$= 17.489$$

F Test for Grade 7 January

$$F = \frac{\theta_2}{\theta_1} = \frac{17.489}{16.678} = 1.05$$

With 56-1 df for the numerator and 56-1 df for the denominator an F value of 1.57 is required to show a significant difference.

Therefore, the samples came from populations with common variances and *t* test calculations can proceed.

Appendix C-3

Calculations for F Test of Homogeneity for Grade 8

Grade 8A January

X_1	X_1^2
78	6084
71	5041
79	6241
88	7744
80	6400
95	9025
81	6561
39	1521
95	9025
85	7225
83	6889
28	784
77	5929
30	900
70	4900
69	4761
61	3721
50	2500
56	3136
82	6724
53	2809
82	6724
50	2500
35	1225
75	5625
59	3481
90	8100
92	8464
69	4761
90	8100
78	6084
77	5929
77	5929
50	2500
81	6561
85	7225
72	5184
35	1225
78	6084
40	1600

Grade 8A January

X_1	X_1^2
68	4624
69	4761
71	5041
54	2916
77	5929
64	4096
58	3364
93	8649
61	3721
45	2025
85	7225
40	1600
76	5776
78	6084
73	5329
71	5041
60	3600
78	6084
78	6084
60	3600
71	5041
60	3600
53	2809
16	256
53	2809
27	729
78	6084
71	5041
62	3844
78	6084
64	4096
91	8281
67	4489
47	2209
84	7056
44	1936
76	5776
68	4624
85	7225
72	5184
76	5776
71	5041
63	3969
70	4900
50	2500
74	5476
57	3249

Grade 8A January

X_1	X_1^2
66	4356
50	2500
51	2601
70	4900
36	1296
64	4096
53	2809
54	2916
50	2500
66	4356
60	3600
56	3136
64	4096
67	4489
58	3364
80	6400
51	2601

$\Sigma X_1 = 6848$

$\Sigma X_1^2 = 478870$

$(\Sigma X_1)^2 = 46895104$

$N_1 = 104$

$\overline{X}_1 = 65.8$

Standard Deviation for 8A

$$\theta_1 = \sqrt{\frac{478870 - \frac{46895104}{104}}{104}}$$

$$= \sqrt{\frac{478870 - 450914.46}{104}}$$

$$= \sqrt{\frac{27955.54}{104}}$$

$$= \sqrt{268.80327}$$

$$\theta_1 = 16.4$$

Grade 8B January

X_2	X_2^2
95	9025
82	6724
64	4096
40	1600
40	1600
73	5329
40	1600
60	3600
77	5929
56	3136
74	5476
64	4096
84	7056
70	4900
45	2025
68	4624
42	1764
44	1936
67	4489
73	5329
61	3721
30	900
97	9409
63	3969
63	3969
61	3721
95	9025
63	3969
45	2025
73	5329
92	8464
63	3969
75	5625
61	3721
38	1444
73	5329
53	2809
74	5476
70	4900
90	8100
40	1600
88	7744
70	4900
88	7744

Grade 8B January

X_2	X_2^2
70	4900
63	3969
81	6561
48	2304
63	3969
73	5329
53	2809
98	9604
80	6400
80	6400
67	4489
73	5329
80	6400
44	1936
56	3136
64	4096
62	3844
71	5041
89	7921
87	7569
51	2601
47	2209
89	7921
73	5329
62	3844
71	5041
87	7569
91	8281
60	3600
89	7921
62	3844
69	4761
80	6400
66	4356
75	5625
53	2809
38	1444
61	3721
46	2116
52	2704
55	3025
68	4624
68	4624
64	4096

Grade 8B January

X_2	X_2^2
57	3249
46	2116
60	3600
24	576
60	3600
65	4225
73	5329
36	1296
68	4624
55	3025
66	4356
80	6400
55	3025

$\Sigma X = 6608$

$\Sigma X^2 = 457088$

$(\Sigma X)^2 = 43665664$

$N = 101$

$\overline{X} = 65.4$

Standard Deviation

$$\theta_2 = \sqrt{\frac{457088 - \frac{43665664}{101}}{101}}$$

$$= \sqrt{\frac{457088 - 438941.31}{101}}$$

$$= \sqrt{\frac{18146.69}{101}}$$

$$= \sqrt{179.6702}$$

$$\theta_2 = 13.4$$

F Test of Homogeneity

$$F = \frac{16.4}{13.4} = 1.224$$

The F test was applied to determine if both samples came from populations with a common variance. With $N_1 - 1$ or 103 df for the numerator and $N_2 - 1$ or 100 df for the denominator an F value of 1.39 is needed to be significant at the .05 level of confidence. Therefore, the hypothesis that the two samples came from populations with common variance is accepted. The ordinary t test could then be applied, and the t test for significance of the difference between means.

Appendix D-1

Calculation of t Test for Grade 5

1. The Standard Error of the Difference (S_{diff}) was calculated using the formula for pooling variances.

$$S_{diff} = \sqrt{\frac{\Sigma X_1^2 - \frac{(\Sigma X_1)^2}{N_1} + \Sigma X_2^2 - \frac{(\Sigma X_2)^2}{N_2}}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

$$= \sqrt{\frac{110129 - \frac{3122289}{30} + 111706 - \frac{2862864}{27}}{30 + 27 - 2}\left(\frac{1}{30} + \frac{1}{27}\right)}$$

$$= \sqrt{\frac{110129 - 104076.3 + 111706 - 106032}{55}\frac{57}{(30)(27)}}$$

$$= \sqrt{\frac{(11746.7)(57)}{(55)(30)(27)}}$$

$$= \sqrt{15.029448}$$

$$S_{diff} = 3.877$$

2. $$t = \frac{\bar{X}_2 - \bar{X}_1}{s_{diff}}$$

$$= \frac{62.667 - 58.9}{3.877}$$

$$= \frac{3.767}{3.877}$$

$$= 0.9716$$

With 27 + 30 - 2 df, significant at the 5% level, a critical value of 2.005 is required. The null hypothesis is, therefore, accepted.

Appendix D-2

Calculation of t Test for Grade 7

1. $$s_{diff} = \sqrt{\frac{\Sigma X_1^2 - \frac{(\Sigma X_1)^2}{N_1} + \Sigma X_2^2 - \frac{(\Sigma X_2)^2}{N_2}}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

$$= \sqrt{\frac{230593 - \frac{(3470)^2}{56} + 282642 - \frac{(3856)^2}{56}}{56 + 56 - 2}\left(\frac{1}{56} + \frac{1}{56}\right)}$$

$$= \sqrt{\frac{230593 - 215016.07 + 282642 - 265513.14}{110}\left(\frac{1}{28}\right)}$$

$$= \sqrt{\frac{513235 - 480529.21}{(110)(28)}}$$

$$= \sqrt{10.618763}$$

$$= 3.259$$

2. $$t = \frac{\overline{X}_2 - \overline{X}_1}{s_{diff}}$$

$$= \frac{68.857 - 61.964}{3.259}$$

$$= \frac{6.893}{3.259}$$

$$= 2.13$$

With 56 + 56 - 2 df, significant at the 5% level, a critical value of 1.983 is required. The null hypothesis is, therefore, rejected.

Appendix D-3

Calculation of t Test for Grade 8

1. The Standard Error of the Difference (S_{diff}) was calculated using the formula for pooling variances.

$$S_{diff} = \sqrt{\frac{\Sigma X_1^2 - \frac{(\Sigma X_1)^2}{N_1} + \Sigma X_2^2 - \frac{(\Sigma X_2)^2}{N_2}}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

$$= \sqrt{\frac{478870 - \frac{46895104}{104} + 457088 - \frac{43665664}{101}}{104 + 101 - 2}\left(\frac{1}{104} + \frac{1}{101}\right)}$$

$$= \sqrt{\frac{478870 - 450914.46 + 457088 - 432333.31}{203}\left(\frac{205}{10504}\right)}$$

$$= \sqrt{\frac{10805597}{2132312}}$$

$$= \sqrt{5.0675497}$$

$$= 2.25$$

2. $$t = \frac{\overline{X}_1 - \overline{X}_2}{S_{diff}}$$

$$= \frac{65.8 - 65.4}{2.25}$$

$$= 0.178$$

With 101 + 104 - 2 df, significant at the 5% level, a critical value of 1.98 is required. The null hypothesis is, therefore, accepted.

Appendix E

Questionnaire Used in Study Strategies Follow-Up

Study Strategies Follow-up

Earlier this year you were involved in a project that gathered data about studying. It has been several months since you received instruction in strategies for studying. Your answers to the questions that follow will help to complete this investigation.

Part I

Directions: Circle one response for each question.

1. What effect did the instruction have on you? POSITIVE NEGATIVE NONE
2. The amount of time I spend studying now is MORE THE SAME LESS
3. What effect did it have on your marks? BETTER THE SAME WORSE

Part II

Directions: Circle one response and give reasons.

1. Has the program changed the way you study? YES NO

   How? ____

   ____

2. Would you recommend this program to others? YES NO

   Why? ____

   ____

3. What part was most helpful? Circle one.

My Study Chair Goals and Rewards Day Plan
Remembering Time-Lining Cheat Sheet
Studying Science Studying Math Studying L.A.
Studying Social Studies The Kitchen Technique

What made this helpful? ______________________________

____

4. What part was least helpful? Circle one.

My Study Chair Goals and Rewards Day Plan
Remembering Time-Lining Cheat Sheet
Studying Science Studying Math Studying L.A.
Studying Social Studies The Kitchen Technique

What made this least helpful for you? ____________________

____

Appendix F

Calculation of t Test for Follow-Up Investigation

Grade 5A January Test Scores

X_1	X_1^2
65	4225
45	2025
79	6241
76	5776
71	5041
63	3969
52	2704
51	2601
41	1681
59	3481
72	5184
49	2401
39	1521
45	2025
72	5184
81	6561
78	6084
70	4900
54	2916
58	3364
40	1600
69	4761
42	1764
71	5041
45	2025
64	4096
68	4624
53	2809
70	4900
25	625

$N_1 = 30$

$\Sigma X_1 = 1767$

$(\Sigma X_1)^2 = 3122289$

$\Sigma X_1^2 = 110129$

$\overline{X}_1 = 58.9$